# GAS JOURNAL

VOL. 273. No. 4686 105TH YEAR MARCH 25, 1953

## FUEL POLICY, UNOFFICIAL

IF 'official' fuel technologists hesitate to discuss the problem of formulating a rational overall policy for the conservation of our coal resources there is a certain amount of 'unofficial' criticism of current practice. Some of this criticism is trenchant enough but it is doubtful whether it adds up to a coherent national policy. There is too much tendency in these discussions to get bogged down in detail.

Recently, for instance, Mr. W. L. Boon, now of Powell Duffryn Technical Services, Ltd., initiated a discussion on national fuel policy at a meeting of the Incorporated Plant Engineers. He started by setting out two reasons why such a policy was imperatively necessary. The first was the obvious one—the rapid dwindling of our basic fuel reserves. The second was the demand for more power for the mechanisation of industry. He cited the immense lead which American industry has over us in this respect. The prevailing confusion of thought on fuel is well exemplified by the apparent contradiction between the two. The disappointing conclusions of the Ridley Committee are another example of this confusion. The report presented no overall policy but it did reveal the separate, sometimes conflicting but always unco-ordinated, policies of the three nationalised fuel and power industries.

Mr. Boon examined each of these policies in turn. Naturally we are interested most in his rather brief discussion of the gas industry's policy. His observations were mainly confined to one section of it—not an unimportant one but the one which lies nearest his heart—we mean coke. He calls for a clear-cut, two-fuel policy without vacillation, if only for ten years. He finds that the gas industry will sacrifice coke made for the domestic market *on every occasion* to maintain the gas supply. We wonder just what he means by 'every occasion.' Everyone will agree with him that fuel policy ought to aim at the best advantage of the country as a whole and not for the segregated interests of our nationalised bodies. The unfairness of this criticism is shown by the reflection that so far the only semblance of policy in the direction of the Ministry lies in the allocation of steel and capital to the several industries. It is precisely because these allocations are disproportionately low in relation to the gas industry as a fuel saver that the industry is compelled, at least on many occasions, to gasify coke because it is unable to make sufficient coal gas in its inadequate equipment of carbonising plant.

We need not follow in detail Mr. Boon's spirited stand against all comers in the ensuing discussion. Electricity and coal shot at him from all angles. At one point he came back to his coke supply subject, from a slightly different direction. The gas industry was asking for coking coals, our scarcest and most valuable coals, and yet because they cannot supply enough coke to the coke consumer, that consumer is having to use gas-making coals—a poor fuel for the domestic consumer but valuable for carbonisation. Strange reading for a time when one area board at least is reducing the price of coke to get rid of accumulated stocks. And a strange reversal of the general view—the grievance that these coals are not, as they should be, reserved for carbonisation.

Mr. Oliver Lyle tackled the same problem at another meeting of the same society. He put forward eight principal points that face the framers of a fuel policy. Again the gas industry was exhorted to run as a proper two-fuel industry, though it was admitted that gas-making capacity should be increased. Wise co-ordinated allocation of capital among the nationalised industries was another point. All that was needed, he said, was 'a little minor legislation and quite a lot of direction,' the responsibility for the latter being vested in a non-political permanent Fuel and Power Board.

One glimpse of sanity in these discussions must not be missed. A Mr. Foster in the discussion initiated by Mr. Boon struck the right note: 'We have to take

our calculations from raw coal, not segregated figures, not separate enterprise, but globally on the basic national resources.' And then he too did not think the development of a policy need be very difficult. We wish we could think so. It is when we turn to a really highbrow paper 'Use and Abuse of Fuels' by Mr. W. E. P. Johnson, of Power Jets Research and Development, Ltd., in collaboration with Professor F. E. Simon (whose excursions into this field we have noted before) that we begin to realise how complicated this problem is. These writers, at any rate, see that a complete solution involves heavy capital expenditure, coupled with a rejection of some of the household gods that we worship and the throwing overboard of a number of superstitions and sentimentalities. And yet one only has to read this paper to be thrown into some doubt as to what sort of policy would be framed by independent scientists set up to judge between the several interests and industries.

What fools we mortals be! If we were to spend in five years what we waste in fuel on economising it, we would have a coal production surplus (albeit temporarily), some reasonable comfort, cleaner air to breathe, better services and cheaper energy—instead of which we invest our capital to increase our losses by wastage.

What fools we mortals be! We bribe our miners to get more coal, which they do with great reluctance. We force up the price of coal; the increase presses most heavily on the carbonising industries. We propose to export whatever surplus we may have (we can hardly afford to do otherwise) rather than absorb it in forcing up the production of highly finished products. And in the meantime we allow the coal industry to incite the public to burn more raw coal.

## METHANE AT POINT OF AYR

AT Chester recently, Mr. S. L. Young told a joint meeting of the Institute of Fuel and the Institute of Petroleum the story of the phenomenal recovery of methane from the coal seams of the Point of Ayr Colliery, North Wales, about which a good deal of somewhat optimistic speculation has appeared in the lay Press. And because it is phenomenal it cannot be taken as a guide to what may be expected in other coalfields. Mr. Young was in charge of these workings for about 35 years and his paper is informed with an exhaustive knowledge of the technical side of the subject from the mining point of view.

The presence of unusual quantities of gas had been obvious from the very earliest days of prospecting. The seams lie out under the waters of the estuary of the Dee. First contact was made with the coal in 1865 when there was reported: A great noise of gas, rattling the hand boring rods causing them to jump with gas blowing like the wind and water smarting the eyes.' This work was done below high-water mark between the tides under all the difficulties which that entailed. Great credit is due to these men for establishing as they did proof of a very rich, extensive and important Flintshire coalfield. These first attempts at exploiting the field were not, however, commercially successful. A shaft 15 ft. in diameter sited on the water line—at high tides this part of the surface was practically an island—was sunk to a depth of 100 yards into the coal. They ran into a fault not far from the pit bottom and were forced to abandon the project. But in 1885 work was resumed by a new company, Point of Ayr Collieries, Ltd., who dewatered the pit and struck out in another direction where they at once found themselves in a very large field of coal. They continued working until vesting day in 1947. The coal lies in a succession of seven or nine seams one below the other. The top three or four seams are now worked out, or largely so, up to a fault lying east several hundred yards from the pits. The large quantities of gas, fire-damp, the dangers of which have been mitigated by the presence of a 'good amount' of water, evidently called for untiring safety precautions and it speaks volumes for the vigilance and devotion to duty of the management and men that no major explosion has occurred at this colliery.

A curious feature of the occurrence of gas at Point of Ayr is that it is contained in the coal seams themselves and not in the strata above and below them. These seams appear to be unusually permeable as if sponge-like in structure. The inordinate quantity of gas present is explained by the water-seal of the River Dee which has prevented escape to atmosphere by way of cracks in the overlying stone. To the mining engineer the first necessity in the early years of working was to get the gas away, out of the ventilation stream. It was only later, in 1927, that attention was directed to making use of it, and then not until 1939 that pressure of coal requirements forced this aspect of the problem into action. By then it was possible to tap the gas by way of boreholes from the workings and drifts above to the virgin seam below in advance of working at that level—a method which, suitably equipped and safe-guarded, has been completely successful. And it is interesting to note that the plant for taking the gas to boilers for steam raising was designed and installed in collaboration with W. C. Holmes & Co., Ltd., of Huddersfield.

The gas itself is of a high degree of purity, 98.4% methane, and emission is at the rate of 650 to 700 cu.ft. per min. The whole layout envisages an output of 3 mill. cu.ft. per day for four years. Precautions against stoppage of supply to the boilers and risks of flash-back appear at first sight to be excessive. We must accept Mr. Young's word that they are necessary but we cannot help thinking that the provision of a gasholder in the first place—one is now on order and will shortly be installed—would have been a better safeguard.

It is a pity too that methane of this quality is being used merely to raise steam. Other schemes have been considered—such as compressing the gas for transport in cylinders and piping it to Prestatyn gasworks. Mr. O. P. Cronshaw, whose work in the North Wales gas industry is so well known, did indeed join in the discussion, but with characteristic tact and urbanity he refrained from pressing the essential crudity of the utilisation at present in being. No doubt negotiations

are still under way with the Wales Gas Board about which we shall hear in due course. The interest of the gas industry in methane recovery from the coalfields is obvious.

## SERVICE THE ULTIMATE AIM

DESPITE the fact that these are difficult times, with shortage of capital for necessary development, with irritating restrictions of one kind and another, and with rising costs, we have the opportunity to make the gas industry the best of all the public services. Such, in brief, is the conclusion reached by Dr. J. G. Davidson, Chief Financial Officer of the Scottish Gas Board, as the result of an examination of the problems of large-scale administration, and he adds: 'With a good Gas Act under which to operate I am persuaded we can do it, if we concentrate on minding our own business and subordinating means to ends.' Nationalisation, he said in his recent address to the Scottish (Eastern) Junior Gas Association, has merely accentuated a trend already evident in the last years of the Victorian era—the growing size of the business unit, giving rise to the need for better organised and more uniform organisational systems. The urge for uniformity in large-scale organisation undoubtedly has its dangers but some streamlining of functions is essential. Dr. Davidson serves one employer who has taken the place of some 190 different employers, and one factor which in his view requires some streamlining is the question of conditions of employment. Variety may be the spice of life, but the owner of the vineyard who varied conditions of employment and paid all his servants a penny a day did not enhance his peace of mind.

Two other aspects in which Dr. Davidson stressed the need for streamlining were accountancy and finance, both of which present peculiar problems in Scotland, with its few large and many small gas undertakings spread—in many cases in isolation—over many thousands of square miles. In the matter of accountancy he compared the gas industry with the Scottish banks and Boots, the chemists. A minimum of staffing is required to operate the branch banks and the calls on the services of the staff are intermittent. No economy would therefore emerge by taking away from the staff useful work which can be done between-times, although such work could be mechanised and done at a lower unit cost. In the case of Boots the primary object of the staff is to sell and serve, and to take up their time with bookkeeping would detract from the more remunerative employment of selling goods. Thus in the banks there is almost complete decentralisation of accounting, and in Boots a completely mechanised accounting system. In the gas industry neither of these clear-cut considerations applies with the same force, and the Scottish Gas Board has so far hit on the intermediate method of making group offices the centres for most of the accountancy work, leaving the head office free to aggregate group figures for overall Board purposes.

So far as finance is concerned the Gas Act leaves no option but to centralise completely the finance operations of the Board, involving the all-important task of budgeting both for long-term capital requirements and for the financing of working capital or deficits incurred on revenue account. Whether such estimating should be done at district, group, or head office level is a matter for controversy. As far as capital expenditure is concerned the district and the group, knowing the relative importance of the projected work and their labour situation, and having past experience of material deliveries, would appear to be in a stronger position to estimate the commencing date and progress of the work than is a more remote official. As regards revenue results the position is somewhat different, as headquarters may be better informed of general trends.

The highest level of management has only two functions: (a) to control and (b) to determine policy. To enable it successfully to discharge both those functions there must be a large measure of uniformity—although as we have said there are dangers in too great an urge for uniformity—and much collection and collation of information from officials who do not always appreciate its significance. There is a feeling, perhaps less pronounced today than in the early months of nationalisation, that the industry functioned quite well in prevesting days without much of the detail now required being forthcoming. Conditions under nationalisation are different, and if districts have lost some of their individuality they have also been relieved of much of their accounting, financing, insurance and other worries. There is still room for diversity of practice without diversity of policy, and Dr. Davidson did well to stress that whatever may be their personal bias all who serve the industry have a common basis on which to operate. They are all selling a service to the public, and with that object in view they should co-operate at all levels.

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## THE RUHR COALFIELD

THE present productive capacity of the West German hard-coal mines is put at about 450,000 metric tons a day, but greater output is required. During the war the expansion of productive capacity was postponed, and since the war progress has been hampered by a lack of finance. As the sinking of a large new mine requires about 10 years of continuous work, plans for the expansion of capacity must be long-term.

The general director of the West German Kohlenbergbauleitung, Dr. Kost, stated recently that it was still uncertain whether the hard-coal mining industry would be able to obtain part of its investment requirements from the Schuman community. To be able to acquire investment capital from that source might not be an unmitigated blessing, for it would lead to greater dependence on the High Authority. A preferable source for the required capital would be tax reliefs and credits from the International Bank.

The eventual completion of projects already drawn up would mean that the productive capacity of the Ruhr would be increased by 70,000 metric tons a day, equivalent to some 21 mill. metric tons of output yearly. The interim objective was a daily output of 28,000 metric tons from newly developed mines by 1956, but, owing to finance difficulties, the aim now seems to have been set too high.

A large new mine with an annual output of some 3 mill. tons requires investment capital of about DM.300 mill. (approximately £25 mill.), equivalent to about DM.100 (£8 10s.) per ton of annual output. It is estimated that to make the sinking of a large new mine worthwhile coal reserves of 300 mill. metric tons should be available in order to give the mine, with an annual output of 3 mill. tons, a life of 100 years.

# Personal

**His Royal Highness the Duke of Edinburgh** has graciously signified his willingness to become an Honorary Member of the Institute of Fuel.

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**Mr. John A. Drake,** Managing Director of Drakes, Ltd., Halifax, has left England for a two-months business trip to Australia.

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**Dr. G. Dixon-Lewis** has been appointed Research Chemist in the Department of Coal Gas and Fuel Industries in the University of Leeds.

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**Mr. R. J. V. Wheeler,** Deputy Secretary of Newton, Chambers & Co., Ltd., will become Secretary at the beginning of April in succession to **Mr. A. W. Grogan,** who is retiring. Before joining Newton Chambers, Mr. Wheeler was senior legal assistant at Doncaster to the North Eastern Division of the National Coal Board.

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**Mr. A. Palmer,** of the Dursley unit of the South Western Gas Board, has been appointed showroom superintendent-salesman-canvasser to the Llanelly and Gowerton undertakings of the Wales Gas Board, and took up his appointment on March 16. A native of Lancashire, he spent some years as salesman-canvasser for Cannon Iron Foundries, Ltd., and in 1948 was appointed to the Dursley unit.

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**Mr. H. H. Harper** has been appointed area Sales Representative of Evershed & Vignoles, Ltd., for South Wales and South West England. He has been associated with the electronic and light current industries since 1934, and joined the company in 1948 as a general technical sales representative. Mr. Harper took up his new duties on the retirement of **Mr. Sidney B. Haslam,** O.B.E., who had been the company's agent in South Wales for many years.

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**Mr. Leslie J. Davies** has retired from the post of Assistant Managing Director of Richard Thomas & Baldwins, Ltd., on account of age. He is 66. He will, however, remain on the Board of the company. Mr. Davies has been succeeded as Assistant Managing Director by **Mr. G. A. Young** (General Manager, Ebbw Vale Section). Mr. Young has also been appointed a Director of the Steel Company of Wales. **Mr. Charles G. Gilbertson** has retired from the Board of Richard Thomas & Baldwins on grounds of ill health.

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THE NEW PLANT of the Koppers Company, Inc., at Fontana, California, was opened on February 5. Operated by Koppers' Tar Products Division, the new plant is now producing a general line of products made from the crude tar which comes from the Kaiser Steel Corporation's chemical-recovery coke ovens. The plant will process crude tar to make creosote, coal-tar enamels, pitches for roofing materials, carbon electrodes, foundry cores, fibre conduits, and for special industrial applications.

# Diary

**March 26.—Midland Juniors:** President's Day, Birmingham.

**March 26.—North Thames G.C.C.:** Westminster City Hall, Charing Cross Road, W.C.2.

**March 26.—Northern and Manchester and District Sections, I.G.E.:** Joint Meeting and Visit to new Howdon gasworks.

**March 26.—East Midlands Sales and Service Circle** (Sheffield and Rotherham division): Address by F. E. Sheldon, Sales Superintendent, Sheffield undertaking.

**March 27.—Scottish (Western) Juniors:** Royal Technical College, Glasgow. Short Paper Night.

**March 28.—Yorkshire Juniors:** Short Paper Meeting. A. Moore, G. Sladdin, and D. Thomas. Leeds University.

**March 28.—Western and Wales and Monmouthshire Juniors:** Joint visit to Bedwas Coke Ovens, Newport, Mon. Discussion on Coke Oven Gas Supply compared with normal Gasworks Methods of Carbonisation.

**March 30.—West Midlands G.C.C.:** Dudley Room, Queen's Hotel, Birmingham, 2.30 p.m.

**April 1.—Eastern Juniors:** 'Small Works Practice,' H. W. M. Fiske and E. S. Williams (Members); Peterborough.

**April 7.—South Eastern G.C.C.:** Katherine Street, Croydon, 2.15 p.m.

**April 8.—South Western G.C.C.:** 34, Bridge Street, Taunton, 11 a.m.

**April 11.—Scottish (Eastern) Juniors:** Paper by I. M. Anderson. Kirkcaldy.

**April 14.—Wales Juniors:** 'The American Gas Industry,' E. M. Edwards. Hereford.

**April 15.—Eastern Section, I.G.E.:** Visit to Peterborough Gasworks.

**April 15.—Yorkshire Juniors:** Visit to Works of De La Rue, Ltd. Warwick.

**April 15.—Manchester Juniors:** Evening Meeting at Radiant House, Liverpool. Reading of Papers.

**April 16 and 17.—Scottish Association of Gas Managers:** Spring Meeting at Peebles.

**April 16-17.—Wales and Monmouthshire Section, I.G.E.:** Spring Meeting, Hydro Hotel, Llandudno.

**April 17.—Scottish (Western) Juniors:** Annual General Meeting: Technical College, Glasgow.

**April 18.—Manchester Juniors:** Visit to Birchenwood Coke Ovens, Kidsgrove. 'Liquid Purification,' R. Pollard.

**April 18.—London Juniors:** Afternoon Visit to Bromley Station of the North Thames Gas Board, 2.15 p.m.

**April 21.—London and Southern Section, I.G.E.:** 'The Law and the Gas Industry,' R. G. Huxtable, M.B.E., 17, Grosvenor Crescent, S.W.1.

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# News in Brief

**The Ministry of Fuel and Power** has announced that Coalite is now exempted from the coal supply restrictions and may be supplied to anyone in any quantity by any merchant in the district.

**Attractive new showrooms** in High Street, Lanark, opened by the Scottish Gas Board, will save local people many a long trek to the office at the gasworks overlooking Kirkfieldbank Brae. The change to centrally-situated premises is as welcome as the improvement in the gas over the past three weeks. With the Manager, Mr. Phairn, who had much to do with obtaining the new showroom and office, now in better health and back on regular duty again after having more than a share of handicaps to cope with, all seems well again on the gas 'front.'

**The Chairman** of the South Western Gas Consultative Council, Mr. A. W. Loveys, stated recently that a local council had been told by the South Western Electricity Board that it would wire houses on a new estate free and cut lighting charges by £600 a year if the estate adopted electricity and not gas. Mr. Loveys said that was undue preference and undue pressure, and he protested against it.

**General Descaling Co., Ltd.,** are leaving their present address at 289, Hanover Street, Sheffield, 3, on March 27, and moving to larger and more modern premises in Worksop. They will be installed there as and from March 30. The new address will be General Descaling Co., Ltd., Worksop, Nottinghamshire. (Telephone No.: 3211. Cables—Descaling, Worksop.)

**Decontrol of Steel.**—The Government has decided to end steel control on March 31. The system of steel allocations will be terminated on that date, with the exception of heavy plate required for shipbuilding, which will continue under control. The existing system under which steel prices are fixed by the Ministry of Supply will not be affected.

# BRITISH WOOD PRESERVING ASSOCIATION

## Annual Meeting

MAJOR A. G. SAUNDERS was re-elected President, with Messrs. H. E. Hickson, Stanley Robinson, T. G. Robinson and C. S. White as Vice-Presidents and Mr. Tom Brown (South Eastern Gas Board) as Hon. Treasurer, at the annual meeting of the British Wood Preserving Association at the Holborn Restaurant on March 11. Further increases in membership and in the total of subscriptions received, and, on the basis of column inches, an increase of more than 100% in the amount of editorial publicity accorded to the activities of the Association, were recorded in the annual report.

The chief event of 1952 was the second annual convention at Cambridge in June, with a total attendance of 162, and it was announced that arrangements had been made for the 1953 convention to be held at Trinity College, from June 24 to 26.

### Library Service

During the year a small Library Committee was formed. Arrangements have been made with a number of organisations at home and overseas for the exchange of literature and additions to the library are now listed each month in the B.W.P.A. Bulletin which appears in the journal *Timber Technology*. The Director of the Forest Products Research Laboratory has agreed to the Association maintaining stocks of F.P.R.L. leaflets and these are now distributed in response to particular enquiries. The present arrangement is that 100 copies of certain leaflets are forwarded to the Association and the stock replenished as and when required. Already considerable use has been made of the library facilities by overseas members and those in the provinces.

Purchase of new books has been limited by lack of funds and therefore gifts of books from members would be appreciated. The ultimate aim is that the library should be both a reference and lending library and to this end it is proposed whenever practicable to obtain two copies of books.

For the first time in the post-war years the Association in 1952 exhibited as an independent entity. At the Bath and West Show at Nottingham it had an inside stand in the Forestry tent and an outside stand displaying plant and equipment for preservation work. Attendances were disappointing, owing to the outbreak of foot and mouth disease, and consequently the number of enquiries received was small. At the Royal Show at Newton Abbot, the Association had an inside stand in the Forestry section and here interest in the work of the Association was much greater, particularly during the first three days of the show.

Arrangements have been made for an outside stand at the Royal Show, Blackpool, in July, 1953, and it is hoped to make use of the space available to display plant and equipment. In addition, an outside space has been placed at the disposal of the Association by the Great Yorkshire Show authorities, Harrogate, and it is hoped to make use of this space for displaying examples of treated timber, particularly for estate and farm use.

During the year the Association also provided a certain amount of display material for local exhibitions arranged by education authorities in the Home Counties dealing with preservation of timber.

Good use was made throughout the year of the free advisory service offered by the Association. Apart from enquiries dealt with on behalf of the Board of Trade, Ministry of Agriculture and Fisheries, Admiralty, War Office and Ministry of Supply, the following is an analysis of enquiries answered by the headquarters staff: Dry rot and woodworm, 725; pressure treatment, 215; plant and equipment, 38; miscellaneous, 266.

Seven members were appointed to represent tar and creosote interests on the Council of the Association, as follows: L. W. Blundell (North Thames Gas Board), C. E. Carey (South Eastern Gas Board), L. A. Drapper (South Western Tar Distillers), Major T. Knowles (Association of Tar Distillers), F. M. Potter (Scottish Tar Distillers, Ltd.), G. S. Pound (Coalite & Chemical Products, Ltd.), J. B. Vickers (Yorkshire Tar Distillers, Ltd.).

# Central Heating Code

THE Council for Codes of Practice for Buildings has issued as a draft for comment, Code 341.300, 'Central Heating by Low Pressure Hot Water,' prepared for the Council by a joint committee convened by the Institution of Mechanical Engineers and the Institution of Heating and Ventilating Engineers.

The code comprises a head-code and seven sub-codes incorporated in one document, the sub-codes dealing with boilers and calorifiers; storage vessels; pipework, fittings, valves and cocks; appliances (column radiators, surface panels, convectors); unit heaters; power driven circulating pumps for low pressure hot water heating installations; and thermal insulation. The head-code deals with central heating by low pressure hot water in general, while the sub-codes cover in detail the subjects indicated in their titles. Each sub-code includes a list of the relevant British Standards, and cross references to the head-code and to other sub-codes are inserted wherever appropriate.

The code is subject to amendment in the light of comments received which should be submitted by April 15. Copies may be obtained from the British Standards Institution, 24/28, Victoria Street, London, S.W.1, price 15s., post free.

# Outstanding Debt

THE Institute of Municipal Treasurers and Accountants has published its *Return of Outstanding Debt at March 31, 1952*. The return, which relates to all counties, county boroughs, and metropolitan boroughs, and over 400 non-county boroughs and urban districts, follows the form of the last tabulation of outstanding debt which was published in respect of the year ended March 31, 1950. No return was issued for the year ended March, 1951, and henceforth these tabulations will be prepared biennially.

The tabulation consists of an analysis of each authority's net debt over the various services which are grouped under the broad classifications of trading services, housing, social services, and transferred services. The total outstanding debt for each authority on housing and on social services is expressed as an amount per head of population and also as an amount per £ of rateable value. Details of the sources from which the loans were raised are shown in respect of each authority together with the amount of sinking fund and loans fund investments and cash in hand.

A summary table gives totals and averages for all counties, county boroughs, metropolitan boroughs, and the sample of non-county boroughs and urban districts included in the tables. Copies of the return are available from the Secretary of the Institute, price 5s. per copy (post free).

# Shortage of Shillings

HUDDERSFIELD CHAMBER OF TRADE has discussed the shortage of shillings, due, it was stated, to their considerable use for gas and electricity meters. Shopkeepers complained of the elusiveness of the 'bob,' and it was suggested that in outlying districts shopkeepers were losing custom because they had insufficient shillings. It was alleged that people had been heard to say: 'Don't go in there, they never have any shillings for the meter.'

Members wondered whether hundreds of shillings were not being locked up in meters. It was agreed to send a letter to the manager of the Chamber's bank asking for his suggestions, and also to write Mr. Donald Wade, M.P. for West Huddersfield, and Mr. J. P. W. Mallalieu, M.P. for East Huddersfield.

Although one member suggested that the Electricity Board and the Gas Board should be asked to empty their shilling meters more frequently, no action was taken on that point, even though it was stated that if there were 1,000 shilling meters in Huddersfield with £2 locked up in each it would account for something like 40,000 shillings.

**Long Service.**—On behalf of the East Midlands Gas Board Mr. R. C. Arnold, Spalding district Group Manager, presented long service awards to two employees who have served 40 years in the industry. A Spalding stoker, Mr. F. May, received a gold watch and a member of the Holbeach distribution staff, Mr. R. C. Willey, a clock.

# South Western Gas Prices

## Not Being Raised this Year

A DISCUSSION took place at the South Western Gas Consultative Council meeting at Taunton on March 18 about the Gas Board's policy on publicity. It arose out of correspondence between a North Devon consumer and his M.P., Brigadier Peto. The consumer had complained of the amount spent by the Gas Board on brochures and Brigadier Peto had sent the letters to the Council for its observations.

Mr. C. H. Chester, C.B.E. (Chairman of the Gas Board) said it was imperative that the Board should have even more publicity. The present costs were extremely small.

Mr. W. F. Hender (Launceston) said what people complained of were the expensive brochures published by the Board which, he said, were nine times out of ten not read. He had not heard anybody criticise the Board's publicity in the Press.

Finally the Council passed a resolution that, in the interests of fuel efficiency, greater and wider facilities for publicity should be allowed to gas boards in bringing before the public the particular merits of gas and its by-products. Copies of the resolution are to be sent to the Ministry of Fuel and Power, to the Gas Board, to Brigadier Peto and to the consumer who had made the complaint.

### A Non-Political Business

Mr. Chester, addressing the Consultative Council, said that despite heavy increases in salaries and in coal and transport costs, gas prices would not be raised this year. This was possible because of amalgamation of small undertakings, economies and improved efficiency. Only two other boards in the country, he said, have not increased prices this year.

The Board and all the staff were running a huge organisation as a non-political business, purely engaged on service to the public for the supply of gas, coke, tar, and other by-products. Had no increases in costs outside their control taken place since vesting date, the cost of their commodities would have been cheaper than at vesting date. That was something of which they were justifiably proud, coming as it had done in times of great difficulty.

The standard of service to the consumer had been materially increased, and sales of all commodities had increased enormously. The sale of gas cookers, in particular, had risen to unprecedented heights, and had more than doubled in rate since vesting day, and they now had a turnover for gas appliances well in excess of £1½ mill., and the total turnover now exceeded £15 mill. per annum.

The Board's last annual report showed that total net increases in costs since vesting day had been £2,850,000, or 6d. per therm, of which only a net 4.1d. per therm, or £1,963,000, had been passed on to the consumer—which made an annual saving arising from improved efficiency and organisations of no less a sum than £887,000, or 1.9d. per therm, or 31% in total. To achieve this had meant a tremendous effort on everyone's part, and he paid tribute to the loyalty and devotion to the industry of all those with whom he came in contact. He was confident that when this year's figures were complete these annual savings would now have totalled more than £1 mill., and this figure was an achievement —'a good answer, I suggest, to much of the ill-informed criticism'—but they were not resting on their laurels by any means. They were not viewing the present financial position with any feeling of complacency, because since the date of that report and his last visit to the Council, costs had still further increased.

### Every Economy Exercised

Every economy that could possibly be achieved, so long as efficiency and development were not retarded, was exercised—even down to telephones and notepaper. Moreover, most of the obvious methods of making quick savings had been achieved, and they had been seriously delayed in their integration of works and offices by the shortage of steel and cast iron pipes. For example, the large new gasworks at Stapleton Road, which would save no less than 33,000 tons of coal per annum, and reduce costs at Bristol very materially, were already two years late in completion, and would not be in production until the second half of 1954 at the earliest. Not only were they not getting the savings, but the interest on the capital in the meantime was a heavy burden. Similarly, their programme for the whole integration of the area of over 250 miles in length—which was completely programmed—was running much behind schedule and delaying the economies they sought.

Since vesting day they had closed down nine small, inefficient works up to the end of March, 1952; and during the current year, to March 1, a further two works; while they anticipated during the year commencing April 1 next to close a number of other works. The closing of some of these works meant a saving of the order of 6d. or more per therm. In the same way, by mechanisation of accountancy and central billing, they were able to reduce overheads considerably; but this, again, needed accommodation in the right place and was being carefully programmed.

### Standard Quality

They took over 105 manufacturing stations at vesting day—now reduced to 94, and the quality of gas varied very materially throughout the whole area, with wide variations in quality and pressure. By the end of last year the Southern division was able to work to a standard quality of 460 B.Th.U., and the Northern division to 475 B.Th.U. A further development of this standardisation of quality and service which would be a material help on interchangeability of appliances and services had been achieved, and within a month or two now the whole area—with the exception of one or two very small undertakings which would be supplied by gas of a different type, made from butane or propane from oil distilleries—would have a uniform quality of 470 B.Th.U.

Once Stapleton Road was complete they would be able to guarantee throughout the area a constant supply of smokeless fuel in the way of coke, in different sizes, uniformly graded. They had made great developments in the supply of new coke grates, and were now supplying and fitting about 1,000 a month.

Coming to the latest financial appraisal of the finances of the Board, their forecast of this year's net profit was £114,000. He was doubtful whether that target would be achieved, because during the year there had been the following increases in cost: National awards of wages and salaries, £73,000; increased freight and transport rates, £45,000; increased pit-head prices of coal (March, 1953), £40,000; National Insurance, increased employers' contribution, £7,000. The total increased costs since he met the Council under these main headings alone were £165,000, less an amount to be recovered on increased coke prices of £25,000, bringing the net increase to £140,000.

### Next Year's Increases

These figures for next year would be: —National awards of wages and salaries, £175,000; increased freight and transport rates, £108,000; increased pit-head prices of coal, £446,000; National Insurance, increased employers' contributions, £14,000; capital charges, interest and appreciation, £215,000; other materials and services (estimate), £100,000, making a total of £1,058,000, less an amount to be recovered from coke of £210,000, bringing a further net increase in cost since last year under these main headings to £848,000.

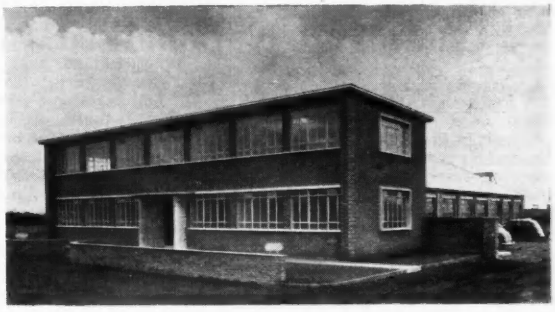
On March 16 the Board had a meeting with all managers and accountants, and considered how, if at all, it would be possible for the Board to avoid putting up the price of gas to recover these large estimated costs and to prevent a deficit on next year's working. They were unanimous that at the present time it would not be in the public interest further to increase the price of gas, as it would have a serious effect on sales to both industrial and domestic consumers, and they felt, as a short-term policy, justified in attempting to pay their way without an increase as their contribution to the stabilisation of costs, which this country so badly needed, even if they had to scrape the bottom of the barrel very, very hard.

If the consumption of gas could be increased by 2½%, they could balance their expenditure, and it was to increased sales that they were looking. Consumers could be assured that if they made their contribution in this way there would be no increase in the price this year.

# TULLY'S NEW WORKS AT NEWARK

## *First Stage Completed*

***Tully, Sons & Co., Ltd., have recently completed the first stage of their new works at Newark. These new works include a machine and assembly shop, together with an office block covering technical, design, and drawing offices, also laboratories.***



*General View of Office and Works*

THE original company was founded by the late C. B. Tully, who was well known at the beginning of the present century for his many contributions to all aspects of gas engineering. Between 1900 and 1926 he was associated with the filing of a considerable number of specifications covering a wide range of developments in both gas manufacture and gas supply.

Today, however, the company is best known for its development work in connection with the Tully system of low pressure complete gasification. This work commenced in 1898 when C. B. Tully, in conjunction with Professor Lewes, developed a plant which later became known as the methane hydrogen plant. This plant underwent various modifications to meet changing conditions in the industry and finally developed as a complete gasification plant with a superimposed retort over a water gas generator designed so that the waste blow gases from the water gas reaction zone passed up through flues surrounding the retort.

### Continuous Commercial Use

Of a number of low pressure complete gasification systems introduced, the Tully system is the only one which has been in continuous commercial use in this country on any scale, and, in fact, plants to the extent of over 600 mill. cu.ft. per day have been constructed, of which 100 mill. cu.ft. per day are of recent manufacture. At the present time plant of approximately 200 mill. cu.ft. per day is known to be in operation in this country and on the Continent.

The late O. E. Yeo, who was associated with the company for many years, was an early pioneer in the development of mechanical operators for water gas and Tully plants. The No. 1c positive acting mechanical operator is well known in the gas industry and has a sound reputation for efficient and reliable working under difficult conditions. Recently a new operator has been designed which retains the basic principles of the No. 1 type operators but has an extremely flexible and ingenious timing mechanism together with many other improvements.

### Specialisation

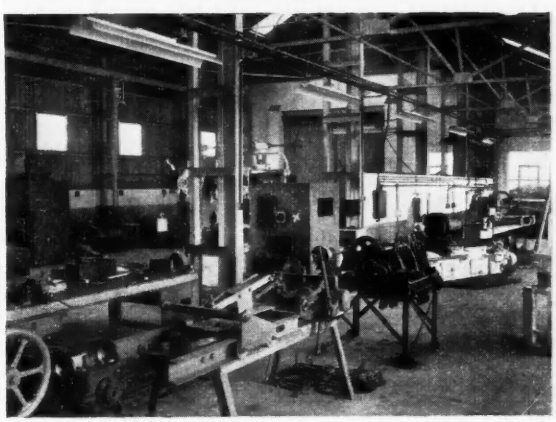
As a natural consequence of their interest in mechanical operation, Tully, Sons & Co., Ltd., have specialised in the design and manufacture of associated mechanical equipment for complete gasification plants and water gas plants, such as blast valves, stack valves, washboxes, oil and steam controls, etc. All this automatic equipment is manufactured directly by them and the new works which is now in operation has been specially planned and fitted for this specialised branch of engineering. The works also manufactures all the other specialised equipment for these type of plants.

The construction of water gas plants and complete gasification plants embraces the whole field of engineering and it is not an economical proposition for an organisation to manufacture the whole of the components required. Tully's interest is primarily the design of the whole installation, and their technical and design staff consists of experts from various branches of engineering to carry out this work. As stated, Tully's design and manufacture the whole of the specialised equipment required for the plants, but standard engineering components such as structural steelwork, plate work, standard valves, etc., are obtained from reputable national suppliers in accordance with the designs prepared by the company. All the site construction work is carried out by Tully's under the direct supervision of their engineers.

### Designed on Unit Basis

The new offices and works were designed by the company in conjunction with William Saunders and Partners, Architects. The works design has been made on a unit basis allowing for future extensions. The design of the office block is also on a unit basis and permits re-arrangement of the internal partitions without disturbing the main shell. Future expansion will include the extension of the existing works blocks to form additional storage and assembly space and a duplicate office block.

*Reception and Display Hall*



*The Assembly Shop*

IN PARLIAMENT

# Control of Nationalised Industries

AT Question Time on March 17, Mr. JOSEPH GRIMOND (Orkney and Shetland) asked the Prime Minister what changes, in the light of recent experience, he intends to introduce in the methods of management and control of those industries which are to remain nationalised.

Mr. CHURCHILL said these matters are kept under review by the Boards concerned and by the Government, and he had no changes to announce at the moment. Further asked by Mr. Grimond if he did not think it desirable that the policy of the Government with regard to these industries, and in particular with regard to the need to protect the consumers who depend on these industries, should now be started, the Prime Minister replied that a Select Committee was appointed in December, 1951, to consider the present methods by which the House is informed of the affairs of the nationalised industries, and to report what changes might be desirable. One report had already been received from the Committee, which was still continuing its labours.

Mr. DAVID RENTON (Huntingdon) asked if his right hon. Friend could persuade his noble Friend Lord Leathers to bring the heads of the nationalised industries together in order that they might confer with a view to ceasing chasing each other upwards in their costs—to which the Prime Minister somewhat dryly observed that he had no doubt the hon. Gentleman's question would be read in many quarters.

## North Western Tariffs

'Almost every month now in the north-west we get a new gas tariff,' complained Mr. CHARLES FLETCHER-COOKE (Darwen), opening the adjournment debate on March 18. He was not sure whether the one he had in his hand was the latest although it was dated January, 1953.

The were two points he wished to raise, about one of which—the actual increases in the charges for gas—he was bound to say he did not expect to get very much satisfaction. But the second point, upon which he hoped to get some answer was the inequitable way in which these increases had been levied, particularly on small industrial consumers. Small business men who had written him, particularly bakers and fried fish merchants and people of that sort stated that they were no longer going to use gas, and would turn to oil if their resources permitted. It would be a bad thing if the district as a whole became more dependent upon an imported instead of a local product.

To give some idea of the great increase that had taken place, Mr. Fletcher-Cooke mentioned that in 1950, when the Gas Board took over, the charge per therm was 9d. That was for the first 500 therms per quarter, and if more than 500 therms were taken the charge went down to 8½d., so that there was a little rebate for quantity. There was no meter rent and there was a small discount for cash. In January, 1953, what did they find? For the first 65 therms the charge was double what it was in 1950. It was 18d. per therm. There were large gradations of price according to the amount taken. The next amount was 1,200 therms, for which the price was 16d. per therm, then 2,000 therms at 14½d., and so on until, for a consumption per quarter of over 90,000 therms, the price was 9d. or thereabouts. In other words, for the very large consumer there had been practically no alteration at all since 1950 whereas for the small consumers the charge per therm had in many cases doubled.

## A Sinister Feature

Rebates for quantity were in small measure, familiar features of industrial life, and could be justified. To deliver a load of coal in a wagon might be cheaper because of the quantity and because overheads were less, although not very much less. He challenged the Parliamentary Secretary to the Ministry of Fuel and Power to say that a reduction from 1s. 6d. to 9d.—a bracket as wide as that—could be accounted for by saving on delivery in quantity. If it could not be so accounted for, it was a very sinister feature of the charges to the consumer.

Small people—bakers, fish fryers, etc. —had not the capital resources to enable them to turn to alternative fuel. They had invested their capital in gas-burning equipment and they could not convert as easily as could the large central bakery in the big city, which got a big relative advantage in the new tariff, and that was a bad development.

The savage gradation between the large and the moderate and small man was bad enough, said Mr. Fletcher-Cooke, but it was much worse when one looked at the charges as a whole. The price for the poor domestic consumer who had to put 1s. in the slot was 19½d. per therm whereas in 1950 it was just over 9d. a therm, which was much more than double. Nowadays, of course, there were also charges for meters, and whereas formerly there were small discounts for cash payment of accounts, these had disappeared. If free and fair competition was to be preserved, Parliament should do all it could to stop undue preferences being given to big concerns that had great bargaining and market power. He believed the Gas Board knew it had to get its money from somewhere and it felt it dare not extract its money from the people who had buying power and capital resources to switch to alternative fuel.

Mr. JOYNSON-HICKS, Parliamentary Secretary to the Ministry of Fuel and Power, thought it would be easy to say prices had gone up, some discounts withdrawn, and hardship imposed on the consumer. He reminded the House, however, that the most recent rise of 10%, in the price of coal had been carried by quite a number of gas boards without putting up prices. That was one indication at least of increasing efficiency and of an increasing sense of responsibility that this spiral had to be stopped. When they threw out broad generalisations to the detriment of the boards they should also bear in mind the things which could be said to their credit.

Section 9 of the Gas Act, 1948, Mr. Joynson-Hicks continued, laid down that the gas consultative council for the area had to consider the variation of tariffs and the provision of new or improved services or facilities within the area. That was a matter for them to discuss with the board. Parliament, through the Minister, had appointed the gas consultative councils to be, for that purpose, the representatives of the consumers. If the councils did not agree to the proposals to vary tariffs it was for them to take the matter up with the boards. If they succeeded in persuading the boards that the tariffs were bad and wrong the tariffs would be varied. If they did not succeed it was open to the councils, under the Act, to make their representations to the Minister. It was thus on the representations of the consultative councils that the Minister had the power to intervene by consultation with the boards and with the Gas Council itself and ultimately, if necessary, by making a direction. But there was no power to make a special direction such as would be necessary to effect a change in a tariff unless, and until, it was upon the representation of one of the consultative councils.

## Difficult to Intervene

The fact remained that the tariffs in the North Western area were considered by the consultative council on behalf of the consumers. The consumers—representatives of bakers, and small commercial and industrial men—made representations to the consultative council. Several deputations were received by the district committees of the consultative council. As a result of going into the matter with great care and at considerable length the consultative council came to the conclusion that there was no justification for them to intervene, and they approved the tariff which had been submitted by the Board. It would be abundantly more difficult, if not impossible, even if there was no question as to the power being in the hands of the Minister of Fuel and Power, for him to intervene in a case of that sort and to override the decision already reached by the consultative council.

One of the complications facing the North Western Board when they took over was that, out of the 97 undertakings which had been absorbed, there were no fewer than 35 which had for a number of years been operating at a loss. Obviously, that threw an immediate and exceedingly difficult burden upon the Board. They had had no opportunity of seeking to counteract the effect of the loss by making economies or by taking any of the other steps that had since been taken, and there was no alternative but to increase the price of gas to cover that loss, because it was contrary to the right procedure for a board to trade deliberately at a loss.

Then, they found an exceedingly seri-

ous state of affairs in certain of the undertakings in their area, and it was only fair to the Board to quote from the conclusion of the 1951-52 Report, in which they said:

'There can unfortunately, be no doubt that in many undertakings in the past plant and equipment had been allowed to deteriorate seriously in order to keep down the price of gas. In others the shortage of materials and labour during the war and immediate post-war years had prevented the undertakers from maintaining their plant in the condition which they would have wished. In some cases, the result was that not only was there a likelihood of failure to supply but plant was actually in a dangerous condition.'

The Board had to expend very substantial sums of money in patching up and repairing plant which was inefficient, which should have been scrapped on economic grounds had it been possible to carry on the supply in any other way, and which should have been supplanted by new modernised economic plant. The result was that, on the one hand, the Board had to expend money on which there would be no immediate economic return and from which they would not increase the production of gas from which to obtain increased revenue. On the other hand, it made it necessary for the Board to incur forthwith substantial capital commitments of an investment character which could not, in the natural course of events, show any short-term advantage to the Board's consumers, but which were calculated to show a long-term advantage and a better supply under improved conditions to the consumers.

## Coke Oven Valuation

BENZOL AND BY-PRODUCTS announces that it has agreed upon the value of its coke ovens and by-product plant with the National Coal Board and that the agreed valuation has been recommended to the Yorkshire District Valuation Board.

The company points out that the coke ovens and by-products plant form part of the assets to be valued outside the district global sum for 'coal industry' assets. 'The principal asset, the colliery, of course falls to be valued within the terms of the District award, which appears likely to occasion considerable delay before final agreements involving all other Yorkshire colliery undertakings are reached,' states the company.

In the latest balance sheet, the company's coke ovens and by-products plant are shown at £200,214, as revalued at September 30, 1937, plus additions at cost less sales to December 31, 1946.

## New Town Gas Plant

A DEPUTATION OF OFFICIALS from the Scottish Gas Board, headed by its Deputy Chairman, Mr. D. D. Burns, paid a short visit to the new Fife town of Glenrothes on March 18. Accompanied by members of Glenrothes Development Corporation, including the Chairman, Sir Garnet Wilson, the company visited houses under construction at various sites.

Questioned about the gas service provided to new tenants, the Board's Group Manager for Fife, Mr. D. L. Dickson, said the present supply from Markinch would cease towards the end of the summer and all future supplies would come from Kirkcaldy. There was sufficient plant there to cope with the demand for the next few years, but the possibility of Glenrothes eventually having its own plant was not to be excluded. Of the tenants 60% were using gas at the present time.

## Talk on Meters

MR. D. C. E. POOLE, Technical Director George Wilson Gas Meters, Ltd., gave a talk on March 13 in the Lichfield demonstration theatre to the Cannock group discussion meeting, embodying distribution personnel from Cannock, Tamworth, Rugeley, and Lichfield.

Mr. Poole discussed in controversial terms both ordinary and prepayment meters, dealing particularly with the modern prepayment meter and various aspects of design, which have a material bearing on performance under district conditions. Following the discussion, which was scheduled to last for two hours, but continued for a further hour, Mr. Poole answered a wide variety of questions.

Mr. Poole was introduced by Mr. T. E. Parry, the Cannock group Engineer and Manager, who also introduced a lively discussion on the technicalities of meters and a comparison between the old and modern methods adopted in their manufacture.

At the conclusion of his talk Mr. Poole was thanked by Mr. L. N. Burtonshaw, the Cannock group Sales and Service Superintendent.

**The St. John Square Showroom** of the Wales Gas Board's Cardiff undertaking, whose window displays have built up a high reputation for themselves, recently featured an interesting competition. In collaboration with the National Coal Board a lump of coal was displayed and the public invited to guess its weight. With the lump were displayed various by-products of coal. The prize was a gas cooker or other selected gas appliance valued at £25. The lump was weighed at a public weighbridge and found to be 11 cwt. 21 lb., and the prizewinner estimated it at 11 cwt. 22¼ lb.

## Scottish Spring Meeting

THE SPRING MEETING of the Scottish Association of Gas Managers will be held on Friday, April 17, at the Peebles Hotel Hydro. The principal item at the morning session which opens at 10.30 a.m. will be Mr. Robert Cowie's Presidential Address, and the meeting will be followed by the official luncheon.

As usual the meeting will be preceded on April 16 by a golf competition for the Winson Scott Cup over the course of the Peebles Golf Club. Those intending to take part should advise the Hon. Secretary, Mr. W. P. Rae, 82, Gordon Street, Glasgow, not later than April 7. It is also hoped to arrange a bowling competition on April 16; intending competitors should send entries to the Hon. Secretary, Mr. Thomas Thomson, Alder & Mackay, Ltd., New Grange Works, Edinburgh, 11, before April 13.

By courtesy of Mr. Ernest West a film show of the Association's activities at the annual meetings in 1938, 1951, and 1952, will be given in the Hydro drawing room at 5.30 p.m. on April 16.

## WATER HEATING AT OLYMPIA

*This imposing display of water heaters on the stand of Ewart & Son, Ltd., is a feature of the Gas Section at the Ideal Home Exhibition now in its last week.*

*INSTITUTION OF GAS ENGINEERS*

# South Western Section Visits Cheltenham

THE South Western Section of the Institution of Gas Engineers held a well attended meeting at Cheltenham on March 18 under the Chairmanship of Mr. J. W. Denton, G.M., Torquay Sub-Divisional Manager, South Western Gas Board. During the morning the members visited the Gloucester Road works of the Cheltenham undertaking, and in the afternoon they met at the Demonstration Theatre in North Street. At luncheon at the Queen's Hotel regret was expressed at the absence of Mr. C. H. Chester, Chairman of the South Western Gas Board, and a number of senior officers, and thanks were expressed to Mr. A. L. Morris, Cheltenham Sub-Divisional Manager, for the arrangements for the visit.

The Chairman in opening the afternoon meeting made an appeal on behalf of the Benevolent Fund of the Institution of Gas Engineers, particularly in respect of subscriptions under covenant.

The election of the following new members was confirmed: D. G. Jones (Bristol), D. H. P. Hammond (Exeter), J. Wilson (Bath), E. W. Stevenson (Bristol), A. G. Holtam (Cheltenham), A. E. Williams (Barnstaple), F. S. Pollicot (Lydney), and Bradshaw (Watford). A unanimous vote was also taken in favour of Mr. J. H. F. Watson, of the Wellington Tube Co., Ltd.

While regretting the absence, owing to an important meeting of the South Western Gas Consultative Council, of Mr. C. H. Chester and a number of senior officials, Mr. Denton welcomed several visitors and invited them to make their own specialised contributions to the discussion.

The Chairman announced that the Management Committee had recommended the election of the following officers for the 1953-1954 session: Chairman, C. R. Ingham (Bristol); Senior Vice-Chairman, W. B. Claridge (Swindon); Junior Vice-Chairman, J. W. Dean (Plymouth). The aim of the Section, said Mr. Denton, was to keep a proper balance between north and south, and he also mentioned that although the principal officers next session would include three sub-divisional managers it was by no means intended to restrict those offices to members holding particular positions in the industry.

Mr. Ingham outlining his proposed programme for the 1953-1954 session, said a joint meeting with the Institution of Civil Engineers about the end of the year would hear a paper on special engineering problems encountered in the erection of the reinforced concrete gasholder tank at the Stapleton Road works. In March, probably at Exeter, Mr. Parker would give a paper on steam and water problems at Stapleton Road. In May, at Taunton, Mr. T. L. Tallentire would deal with the special efforts which were being made by the South Cornwall Sub-Division in improving technical service and developing sales. Ladies' Day would be at Weston-super-Mare in July, and the annual general meeting in the autumn at Bristol.

Two papers were then presented, one by Mr. T. W. Jackson, Taunton Sub-Divisional Manager, on 'Integration and the Scope for Development,' and the other by Mr. T. N. Dent, Weston-super-Mare Sub-Divisional Manager, on 'Some Aspects of Works Management.' We hope to publish the papers and reports of the discussions in a later issue of the *Journal*.

Thanks were expressed to the authors on the proposition of Mr. C. R. Ingham.

The Chairman voiced the thanks of the members of the Section to Mr. A. L. Morris, Cheltenham Sub-Divisional Manager, and Mr. C. L. Taylor, Station Engineer at the Cheltenham works, for the facilities afforded for visiting the works. Mr. Denton said he had seen the works two or three years ago, and he congratulated them on the fact that it was looking better now than at that time, notwithstanding the fact that they were grappling with extra problems and rising costs.

Mr. Morris briefly responded and thanked Mr. Denton for his efficient and expeditious conduct of the meeting.

## Harrogate Gas Meter Case

HARROGATE Magistrates gave a decision on March 17 in the case of six people accused of unlawfully and fraudulently abstracting gas from prepayment meters. They were alleged to have used in their meters such things as 'dud' coins, filed half-pennies, foreign coins, washers, and discs.

Referring to the provisions of the Gas Act, 1948, Mr. Herbert Crowther, Chairman, said that in each case there was no dispute that the defendant had abstracted gas from a prepayment meter by means other than the insertion of a shilling for which the meter was designed. In the opinion of the magistrates the operation of the gas meter by the use of such objects as washers, etc., constituted an operation by artificial means within the meaning of the Act. The case would have been clarified if the provisions had used the phrase "wilfully abstracts by artificial means" instead of 'fraudulently' as each defendant admitted the wilful use of washers and other artificial means. The interpretation of the word 'fraudulently' was the fundamental issue because in each case, although the defendant did not deny the use of artificial means, he contested the allegation of fraud in the ordinary sense of the word.

Mr. Crowther added that it would have been the easiest thing in the world, if Parliament had so intended, to say in so many words that 'wilful abstraction by an artificial means' constituted an offence; yet the Gas Act did not say so, and the magistrates saw no reason why they should construe it as though it did. In the circumstances they had come to the conclusion as a matter of law that before convicting any of the defendants they must be satisfied that in abstracting gas by artificial means there was intention to defraud the Gas Board. They therefore dismissed the case against Mrs. Rachel Clarke. She had first started to abstract gas when no shillings were available some ten years ago. Throughout that period her gas meter had been periodically emptied by gas inspectors who then calculated the amount due after giving credit for any rebate and had accepted payment and also returned the tokens to her without raising any objection to their use. Similarly the case against Mrs. Hilda Moore was dismissed.

In the other cases, however, the magistrates concluded that the defendants had failed to discharge the onus of proof and were therefore guilty. They were William Owen, John Pinder, Mrs. Pauline Taylor, and Patrick Gallagher, all living on a housing estate off Knaresborough Road. They were each conditionally discharged on payment of 4s. costs.

## S.B.G.I. Golfing Circle

THE S.B.G.I. GOLFING CIRCLE will hold its summer meeting on Monday, May 18, at the R.A.C. Country Club, Woodcote Park, Epsom. Formal notices and entry forms will be sent to members.

The competition for the Coronation Plate, played for by members of the Institution of Gas Engineers, will also take place at this meeting, and intending competitors should apply for entry forms to the Hon. Secretary (Mr. C. T. C. Woodall, Terminal House, 52, Grosvenor Gardens, S.W.1), as these will not—as in former years—be supplied with the notices for the annual meeting of the Institution of Gas Engineers.

**The General Meeting** of the London and Southern Junior Gas Association arranged for Friday, April 10, will *not* be held; and the discussion on the report of the Gas Industry Productivity Team's visit to America will take place towards the end of the session.

**Codes of Practice for Buildings.**—The Council for Codes of Practice, Construction and Engineering Services, has now published 86 Codes in final form. The total price of these codes is £16 18s. 6d., but the publishers, the British Standards Institution, 24, Victoria Street, London, S.W.1, will supply on demand the complete set of 86 documents at the special price of £12 for the set, post free. This reduced price is subject to revision as further final codes are published.

# *Nationalisation:* Metamorphosis of the Gas Industry

**Following is a report of the discussion which arose out of the presentation by Mr. J. W. Dean, Manager of the Plymouth and North Cornwall sub-division, South Western Gas Board, of a paper on 'Nationalisation: The Metamorphosis of an Industry' at a meeting of the South Western Section of the Institution of Gas Engineers at Weston-super-Mare on January 21.**

MR. C. H. CHESTER, C.B.E., emphasised that he wished to contribute to the discussion as a member of the Institution rather than as Chairman of the South Western Gas Board. He was full of acclamation for the way in which Mr. Dean had been so outspoken, fair and critical. It must do them good in their assessment of the position as it was and as it is now. It was time to take stock. Some of the early problems arose from the fact that they only had a short time to prepare a skeleton staff.

Anything they had done since vesting date to improve what was previously private enterprise was all to the good. They had found in four years savings in costs, due to lack of technical management, particularly in the smaller undertakings. Difficulties had, in a large measure, been solved by collaboration resulting in savings approaching £1 mill. Those savings were very necessary as costs of basic materials and wages had been rising steeply.

## District Sections

The Institution of Gas Engineers—the only major corporate Institution in the gas industry—had always been a pillar of strength because men could get together and exchange opinions and help one another to make the industry successful. That support started the Institution, and when the formation of the district sections came forward he saw the greatest strength that could continue—on one condition—that gas engineers were qualified and put their professional status first. The Institution was also vitally necessary in the development of technical matters of all descriptions in that it could give, and did give, unbiased advice to the Gas Council on request, and which was paid for by the Gas Council. By the end of the first year of nationalisation the Institution was accepted as the technical advisor of the Gas Council, and they should value the confidence thus placed in them.

It had been his aim to keep the Institution strong, but that strength lay in their professional approach to all problems with all the decorum inherent in an association under a Royal Charter.

Conditions had changed greatly. Before 1939 coal and labour were so cheap that small undertakings had no difficulty in selling gas at a reasonable price and making profits. But today presented a different picture. Present day costs had risen to such heights that it was problematic whether many of the smaller undertakings could have existed.

## Heyworth Report

The Heyworth Report was made during and immediately following the war to a Government which was rightly anxious about all public utilities, and the Gas Act followed quite closely the Heyworth Report.

In a large but closely welded concern, as they were, the importance of trusting one another and relying on information getting down through the channels to everyone was great, but it was far more important that everyone could get his viewpoint to the man at the top. Any man who could make a constructive suggestion should be able to get it considered at top level.

The South Western Board endeavoured to do this by the flow of control through the two executive committees which had direct contact with the Board.

The Author had referred to results and collation of information. The idea behind the origination of forms was obviously to set a policy, and the first set was for his benefit —he did not know what was going on in the area. It did not take him long to be able to tell the Board that they were running at a loss. Some undertakings were running at a loss and some were inefficient. They decided that if they adopted good engineering practice they could save £500,000. They had saved that, and that alone was justification for the first set of returns. They must know what was going on, and then, through the guidance of the officers, improvement must be carried out.

## Control of C.V.

Every undertaking in the South West now had a declared calorific value under constant control—a great move.

First of all their product must be right. If they were to sell gas and coke in the best markets it would have to be right. In the meantime he was glad that Mr. Dean had highlighted the increased efficiencies of small works. No saving was too small.

He would have liked to see another page or two on distribution because it came as a buffer between production and utilisation. He hoped at a later date someone would give a paper on the base load factor integrated on scattered works and distribution network. He was convinced that by a true base load system, properly worked, they could have quite a lot more money.

He paid tribute to the small works managers for he had seen evidence of the ingenuity used by them on their difficult jobs. Their loyalty to their consumers was unparalleled—their consistency of effort was remarkable.

Mr. Dean had referred to the tendency of the dissatisfied to discuss the shortcomings of the new system with persons outside the industry, and he agreed with Mr. Dean that this was harmful. Inside the industry, it was a good policy to get any grumbles off their mind.

He had unbounded faith in the progress of the industry. They had only now to get down and go to it, and he thought at the end of the next four or five years they would be pleased with the metamorphosis that had taken place.

**Mr. J. Carr** (Bath) remarked that it had been said that the people in the Institution each talked about successes and never about failures. Of some sections of his old undertaking he was exceedingly proud, but they had six years of war and three years afterwards of difficulties in getting materials. On the success side of his own undertaking distribution was good; parts of production were fair, and parts hopeless.

He had the privilege of giving evidence before the Heyworth Committee. They should not run away with the idea that they were pressing nationalisation. He had to state categorically the details over 20 years—how the industry was built up, etc. He did not lay down the law that other undertakings should be the same. They did not say that nationalisation was the be all and end all.

Early in 1949 the Chairman asked what information they could get. In those days he (Mr. Carr) wrote down 20 questions and those questions were sent out, not for the purpose of annoyance, but merely to get some semblance of what was happening in the Northern division. Mr. Taylor was obtaining similar information from the Southern division. There were 35 undertakings which could not comply with regulations, and the Ministry had to be advised of the position.

**Mr C. R. Ingham** (Bristol) said accountants were essential; they performed a useful service, and in effect they were the eyes and ears of the administrator. They had to help and guide them when they touched on technical matters, which, naturally, they did not fully understand. In the same way the engineer did not fully understand what the accountant

*Continued on p.* 684

# Problems of Large-Scale Organisation

By Dr. J. G. DAVIDSON,

Chief Financial Officer, Scottish Gas Board.

**Address to the Scottish Junior Gas Association (Eastern District)**

I RECENTLY asked a man behind the counter of an establishment which has now been absorbed in a large-scale merger what difference the amalgamation had made to the business, he said: 'None at all. We are just carrying on as usual.'

That, of course, is the first and correct answer, and the first principle to be universally observed in such cases. Disturb as little as possible the existing practice until you have had time and opportunity to introduce a better or a different practice in the light of changed circumstances. Systems and practices which, like Topsy, have 'growed up' are the product of a cause, and any economic advantage in scrapping these is difficult to assess. The essence of business efficiency is improvement in operation overall, and I lay considerable stress on 'overall' because you may well be critical of some things done since nationalisation which to you don't make sense.

Nationalisation has merely accentuated a trend which was already evident in the last years of the Victorian era—*viz.*, the growing size of the business unit, giving rise to the need for better organised and more uniform book-keeping records, the elimination of many strange and inadequate accounting systems, and the development of large-scale organisational methods with a view to raising efficiency and productivity. With industry staggering under a load of unprecedented taxation, with assets badly in need of replacement at enhanced costs, it is perhaps inequitable that any immediate judgment should be passed on the success or otherwise of nationalisation. Historians of the future may be able to take a fairer view.

## Urge for Uniformity

There is no doubt whatever that this trend towards greatness in the size of adminstrative units has created new problems for administration, and indeed has given rise to the growth of a relatively new science of administration. I have no doubt that an urge for uniformity in large-scale organisations has its dangers. This urge is not unusual among those who are called on to exercise remote control. They desire to create a perfect logical, and symmetrical system, and thus evade the thought and trouble involved in appreciating a flexible and variable system, so often desirable where large and small units are combined. The conflict between specialisation and omnibus versatility will always be with us, and a compromise is generally the via media.

It will be readily appreciated that management cannot supervise and control a vast number of individual transactions over a wide area, and accordingly the first problem facing administration is: What should management do? In my view the highest level of management has only two functions —*viz.*, (1) to control and (2) to determine policy. But if control is to be effective, essential information must be reported to headquarters regularly and promptly for any remedial action to be taken. The proper determination of policy apart from general considerations of national interest, should also be grounded on a background of reliable information and reasonable forecasts of the effect of various possible lines of policy. Control is not concerned merely with the day-to-day operation of the industry, which is the delegated responsibility of local managers, but the orderly development and integration of the industry as a whole in accordance with a general programme which has the sanction of the Government comes within the direct responsibility of the management.

Control can be exercised in a multiplicity of ways—*e.g.*, from the personal knowledge of executive personnel and an assessment as to how far these individuals can be trusted. This is quite important, but not universally reliable as personalities enter almost unavoidably into one's assessment. If, however, it can be backed up by the collection of certain key facts of performance, there is no adequate substitute for knowing your man. There may well be arguments about what is important and essential in performance, and there is always the danger that central administration will insist on the collection of too many facts and thus obscure the essentials, but there are well recognised and proved principles to be observed in the collection of such facts.

## Key Facts

(1) The information asked for should be significant—*i.e.*, it should have a bearing on performance.

(2) The information should be readily ascertainable by those required to furnish it.

(3) It should be prepared in the same manner by all persons required to furnish it, so that any comparisons or inferences drawn therefrom may be equitable.

(4) It should be capable of being furnished promptly if action is to be applied in time.

(5) It should be related to something on which action can and should be taken, and not merely of interest. Management must always be active management and never passive.

You engineers know far more about remote control in a practical sense than I do, and I think you will appreciate that it is based on such simple questions as: What is the pressure at the far end of a main? No ambiguity, no welter of detail, no delay. Which brings me to the next point I should like to stress—*viz.*, standards to judge by.

Central administration endeavouring to control a large organisation will of necessity be constantly comparing results one branch with another, one period with another; but branches and periods have each something different from the other with which comparisons are made. It is therefore desirable to arrive at standards of performance in given circumstances in order to ascertain whether actual performance is above or below that standard.

The setting of standards is not an easy matter. They must be reasonably attainable. The carrot in front of the donkey which advances with the donkey's progress won't do for intelligent people. In my view standards can only be determined after many consultations at various levels and be generally acceptable as fair and reasonable by the people expected to attain them. Experience has proved that where standard costs have been fairly determined, there develops a cost consciousness which goes a long way to conserving the use of time, materials, and money and enables present and future quantitative output capacity to be determined with greater accuracy. Standards and standard costs require to be revised from time to time in the light of known changes and in themselves often draw attention to the need for such revision. If there is to be any control of costs the prerequisite thereof is the ascertainment of costs. Whether this should be done only at the important control points or carried down to meticulous details is a matter depending to some extent on the factors under review.

*Continued on p.* 683

## Streamlining of Functions

If a motor car, an aeroplane, or a steamship is to go ahead with the minimum of resistance, it is a generally accepted principle that streamlining is essential. The same applies to big business if friction and argument are to be reduced to a minimum. Further, if we accept the principle that the main duty of central administration is to control and to determine policy, there are certain aspects of administration which cannot be left to individual fancy. Of these aspects I would stress the need for streamlining (a) accountancy; (b) finance; (c) conditions of employment.

I know of no sphere in which well-recognised principles can be applied with such diversity of practices as in accountancy. 'The best commercial practice' specified in the Gas Act has an infinity of variation. Fortunately for us, the Ministry of Fuel and Power has the responsibility of specifying the form in which the gas industry's accounts shall be published. When that responsibility has been exercised after consultation with chief financial officers the form of our accounts is laid down, and that establishes the basis on which the accounts of every undertaking are kept. Some minor expansion of the statutory form has been considered desirable for more intimate control. But a centralised accounting system is already in practice in all the nationalised industries, and is equally applicable to Boots, I.C.I., and similar aggregations such as banks, etc. Where the main divergence takes place, however, is the extent to which centralisation takes place. I think it is useful to contrast the cases of the Scottish banks and, say, Boots, the chemists.

In the case of Scottish banks with branches scattered throughout Scotland there is a minimum of staffing required to operate the branches and the calls on the services of the staff are intermittent. No economy would therefore emerge by taking away from that staff useful work which can be done between-times, although such work could be mechanised and done at a lower unit cost. Such cost would be merely an addition to the present costs. In the case of Boots, the primary object of the staff is to sell and serve the public, and to take up their time with ledger posting, etc., would detract from the more remunerative employment of selling goods. So we find in Scottish banks almost complete decentralisation of accounting, and in Boots a completely mechanised accounting system at Nottingham for all branches. I think Boots must have amended the motto 'Service not Self' to 'Service not Shelf,' because they don't want their products left on the shelves of their branches, and they have centralised their accountancy work with that end in view.

In the gas industry neither of these clear-cut considerations applies with the same force, and with our British genius for compromise we have so far hit on the intermediate method of making group offices the centres for most of the accountancy work, leaving the head office free to aggregate group figures for overall board purposes.

## Finance

Apart, however, from the mere mechanics of preparing the accounts of the board in the approved form, management accounting is concerned with the provision and use of financial, economic and statistical information of such a nature and content and in such a form as might be of maximum service to the practice of management. As regards finance the urge for a rather higher degree of centralisation is stronger. In each area there is only one board. Only the board can borrow or invest, and their's is the responsibility, via the Gas Council, for financing the industry. Many years ago, local authorities which were responsible for the administration of many clear-cut functions such as education, police, fire brigades, lighting, etc., realised the disadvantages of having their finances encumbered with what came to be termed barbed wire and fish-hooks—*i.e.*, keeping separate funds for their various activities—and there came to be evolved what is now known as a consolidated loans fund, in which were merged all the debit and credit balances of all funds, although separate accounts are kept for the services, and borrowing or investment is only carried out for the overall balance, with consequent savings and much economy of effort. The terms of the Gas Act leave us no option but to centralise completely the finance operations of an area board, and as a consequence this leads me to the next point, budgetting—*i.e.*, forecasting what the board's money requirements are likely to be for financing long-term capital requirements and for the financing of working capital or deficits incurred on revenue account.

Money, as you are well aware, does not grow on a tree or come down as manna from Heaven. It has to be earned or acquired by borrowing and where the sums are considerable notice requires to be given that at such a time such a sum is likely to be required, in order that the necessary funds may be ingathered from those who are in a position to lend them. That is the job of the money market and, in our case, of the Treasury. Therefore the central authority must have an estimate of the expenditure likely to be incurred by the board as a whole which has to be financed by external borrowing—*e.g.*, capital expenditure and the balance of revenue expenditure which cannot be met from actual revenues received. Estimating has never been an easy matter, but in these days, with controls of steel, delays in deliveries, and the spiral of rising prices and labour rates, the matter has become extremely hazardous—'guestimating,' it has been called in some circles.

Notwithstanding the difficulties, there is no alternative to attempting to determine in advance what our borrowing is likely to be and how far the excess spending over income can be met from internal resources. Whether this estimating should be done at district, group, or head office level is a controversial one, but I am inclined to the view that, as far as capital expenditure is concerned, the district and the group, knowing the relative importance of the projected work and their labour situation, and having the past experience of material deliveries, are in a stronger position to estimate the commencing date and progress of the work than is a more remote official. As regards revenue results the position is somewhat different, as headquarters may be better informed of general trends. If districts and groups could concentrate on getting the facts available for headquarters month by month, my feeling is that a fairly accurate estimate of revenue income and expenditure could be made and revised at the centre.

The other factor which I suggested required some streamlining was the conditions of employment. Variety may be the spice of life, but the owner of the vineyard who varied the conditions of employment and paid them all a penny a day did not enhance his peace of mind. Where one employer has taken the place of some 190 different employers, a measure of uniformity in conditions becomes a matter of some consequence. Uniformity, however, is seldom achieved without gains or losses, and it may well be that the losses are where the gains ought to be.

## Determination of Policy

The determination of policy is a much more nebulous function of top management than that of control, but of no less importance. Policy has been defined as the art or manner of guiding and regulating conduct. It is in the nature of prescribing, but no physician would prescribe until he had diagnosed the nature of the ailment. Scientific management is not, however, something that can be bought in a box. It is not quite in the nature of a drug that one takes and feels better. Rather it is in the nature of a perpetual watchfulness over facts as they continue to emerge, and over the effects of any remedies prescribed. All administration in the last analysis is action taken by the ultimate authority. The way in which action is taken and the manner in which such action is decided upon inform the whole process and must depend on:—

(a) The information available.

(b) The degree of centralisation or delegation.

Practice and policy have a habit of shading into each other in such a discerning way that it is unsafe to treat the two separately, but for our present purposes we may look at each aspect in turn.

What information should be available? I think the statistics required by management should be based primarily on three facts—*viz.*:

(1) Trend of progress.

(2) Necessity for prompt action.

(3) Special considerations of broad policy.

It will be appreciated that, for financing purposes and the forecasting thereof, facts which indicate the trend of carbonisation, gas sales, by-products disposal, and so on are the best factual guide to future requirements. Working results with comparative figures of past performance will readily afford a guide, particularly against any known standards, for prompt action where something is not going according to plan. In every industry special considerations of policy such as rationing of steel, restriction of hire purchase, and so on may call for special information from time to time. There is always a danger that such special considerations will be extended beyond the period of the crisis and may even be perpetuated. Periodical revision and pruning are desirable after a crisis had passed.

I am particularly interested in this collection of statistics because I have the responsibility for their collection and I have recently spent a considerable amount of time in devising forms on which such information may be entered and presented to the board. I am perfectly well aware that in the minds of many of you there is a feeling that the industry functioned quite effectively in the past without much of the detail now required being forthcoming. However that may be, I hope you will realise than conditions under nationalisation are different, and that districts have been relieved of much of their accounting, financing, employment, and insurance worries. One cannot measure the health of a nation except by reference to sickness incidence, and if policy has to be rightly determined for improving it the facts of sickness incidence must be available. I am conscious that district managers are often asked to supply information which is far from easy to ascertain, but I think emphasis should be put on the fact that the second-best estimate in time is better than the whole truth too late.

## Delegation

The degree of centralisation and delegation in any large-scale organisation has an important bearing on the extent to which policy should be determined at top level. There is an old saying that he who pays the piper calls the tune. If the ultimate responsibility rests with the board, then it is incumbent on the board to determine whether on such and such a matter it prefers to lay down policy or to accept the ruling of its local agents, even where this may result in considerable diversity of practice. There may well be diversity of practice without diversity of policy. The means to achieve a policy may be quite different without affecting the end, and the criterion should always be: Do the means achieve the end in view? If they do, there is no sanctity in uniformity of practice, but generalisations are somewhat dangerous.

Broadly there are only two systems for the chain of responsibility—*viz.*, what have come to be known as—

(a) Staff and line.

(b) Function.

Under the former there is the direct and relatively straight line of responsibility of the private to the commander-in-chief. Under the latter there is the direct responsibility of the individual to his superior operating in that function, whether it be research, accountancy, distribution.

In hardly any organisation of any magnitude do we find the pure form. Specialisation even in the army cuts across staff and line, and discipline cuts across function. Our industry with its many complications is peculiarly difficult to classify, but whatever may be our personal bias we have a common basis on which to operate. We are all selling a service to the public, and with that object in view we must co-operate at all levels. Despite the fact that these are difficult times, with shortage of capital for necessary development, with irritating restrictions of one kind and another, and with rising costs, we have the opportunity to make the gas industry the best of all the public services. With a good Gas Act to operate under I am persuaded we can do it, if we concentrate on minding our own business and subordinating means to ends.

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METAMORPHOSIS OF AN INDUSTRY—*Continued from p.* 681

was driving at in some instances, and co-operation, tolerance and mutual understanding were of the highest importance.

Capital expenditure was increasing, and unless sales of gas increased in the same proportion the capital charges per therm would be increased. If sales increased in a greater proportion the capital charges would be reduced. The problem was as simple as that.

Mr. Dean had referred to sales policy and he interpreted his remarks as being a suggestion that they should call in an outside firm of sales consultants to see what suggestions they could make, with a view to improving sales policy. It might be a good idea to use one sub-division as a 'guinea-pig' in this matter and tell the consultants that in three years they wanted the sales per consumer to be increased by 50%. They might get some interesting and useful, not to say amusing, experience from that.

**Mr. P. J. Whitehead** (Swindon) disagreed with the author's remark that 'contrary to an opinion held rather widely the consumption per consumer does not tend inevitably to rise when an adequate supply is given.' The Swindon sub-division was now, with the exception of one small works, entirely integrated, eight works having been closed down and the districts supplied by high pressure mains from the Gorse Hill works, Swindon.

Before closing down these works the standard of gas supply in the various districts was very indifferent, and the increase in consumption when these districts were given a good supply from a central station was reflected in the increased consumption which amounted, in some cases, to as much as 100% over a period of four years.

In less than ten years the therms sold at Highworth increased from 26,264 to 65,348 therms, an increase of 148%, and at Faringdon similar conditions had given an increase of 114%.

The consumption per consumer increased over six years as follows:—In rural districts from 60 to 130 therms per annum; in semi-rural districts from 80 to 140 therms per annum; and in town districts from 85 therms per annum to 148 therms per annum.

These results indicated quite definitely that when a poor supply was replaced by a good one the consumption per consumer increased and he failed to see why this should not apply in other districts.

**Mr. W. Verity** (Newton Abbot) said he had feared at one time that the local man was to be pushed on one side, but in the four years their difficulties had relapsed into the past. He was proud of his own undertaking and frankly was sorry to lose control. The works had capacity for future requirements and had still, but they must consider not the present, but the position in, say, ten years' time, when perhaps £100,000 would be needed for extensions. Would he be able to justify that expenditure and be able to find 5% on the outlay in view of the difficult years ahead, or deal with the large expenditure necessary for trunk mains to housing estates on the outskirts of the district?

*Concluded on p.* 688

# THE TREND OF GAS CONSUMPTION

By A. COLLISON,

Peterborough District, Cambridge Division, Eastern Gas Board.

**From a paper to the Eastern Section of the Institution of Gas Engineers**

LOOKING at the Gas Council report for 1951-52 there are some significant features which deserve deep consideration, for example:—

(1) A disposable surplus of rather less than £1½ million on a turnover of £261 millions provides a very small margin, the period since vesting date having been too short for the building-up of adequate reserves. *Consequently, the price of gas must be extremely sensitive to any increase in the costs of production, and to any restrictive influences on gas sales.*

(2) The increase in price of coal, rail freights, wages and salaries, etc., in a full year, is estimated to be £19,600,000, and since the 1951-52 report was published, further increases have taken place or are projected.

A decline in consumption per domestic consumer is evidenced, but despite this it is gratifying to note that the domestic consumption still represents 55% of the total. In some boards the percentage of domestic consumption is much lower, and the percentage of industrial consumption therefore much higher; thus, had it not been for the increased industrial consumption in some area boards, there would, of course, have been a decrease in output.

Over the area covered by the report as a whole, the number of domestic prepayment consumers increased by 0.5% and domestic credit consumers by 2.9%, while the consumption for domestic prepayment consumers remained static, and the domestic credit consumption decreased by 1.7%. There was also a noticeable decline in gas consumption by Central Government of 4.4%, and by Local Government of 8.2%.

## The Open Market for Fuel Oil

We must admit, I think, that it would be wrong to assess the present increased demand for gas without taking into consideration the facts which have brought it about, and also how any alterations in thees conditions are going to affect the future. I think it can be safely said that the present increased demand is due to a continuance of the demand by industry created during the war; a more or less continuance of full employment; (mention of the growing demands for fuel arising from the rearmament programme and full employment is made in the report of the Gas Council), increased demand by catering and commercial establishments; additional domestic consumers; and, finally, conditions which affect our load but are not always taken into consideration as they should be. These are, shortage of labour necessitating the use of gas for ease of operation and cleanliness; fuel costing by industry and commerce not being so keen in the past, as manufacturers have been experiencing a sellers market; and, of course, the general shortage of other fuels, the principal of which have been, and still are, rationed. One factor which may affect us vitally in the future is the open market for fuel oil, which for some years now has been restricted, and from which in the future we may anticipate a price-selling war.

Peterborough gasworks supplies the City of Peterborough and neighbouring urban and rural district councils, and serves a population of up to 60,000. The district has a large agricultural background, developing industry (employing upwards of 10,000 people), and is an important market and shopping centre for a large area.

The following information concerning Peterborough relates to the year ended March 31, 1952.

| | |
|---|---|
| Total gas sold before adjustments for unread gas ... ... ... ... | 4,100,685 therms |
| Total number of consumers ... ... | 17,447 |
| Average consumption per consumer ... | 235 „ |
| Gas sold—domestic prepayment consumers ... ... ... ... ... | 1,213,925 „ |
| Number of prepayment domestic consumers ... ... ... ... ... | 8,642 |
| Average consumption per prepayment consumer ... ... ... ... | 140 „ |
| Gas sold—domestic ordinary consumers | 994,795 „ |
| Number of ordinary domestic consumers | 8,051 |
| Average consumption per credit consumer ... ... ... ... | 124 „ |
| Average consumption per consumer for total domestic consumers ... ... | 132 „ |
| Percentage of total gas sold to domestic consumers ... ... ... ... | 53.9 |
| Percentage of total gas sold to industrial consumers ... ... ... ... | 31.6 |
| Percentage of total gas sold to commercial consumers ... ... ... ... | 14.5 |

While domestic consumers represent 95.6% of total consumers, their sales amount to only 53.9% of the total.

Approximately 50% of the industrial consumption is space heating, and this represents about 15% of the total consumption of all consumers.

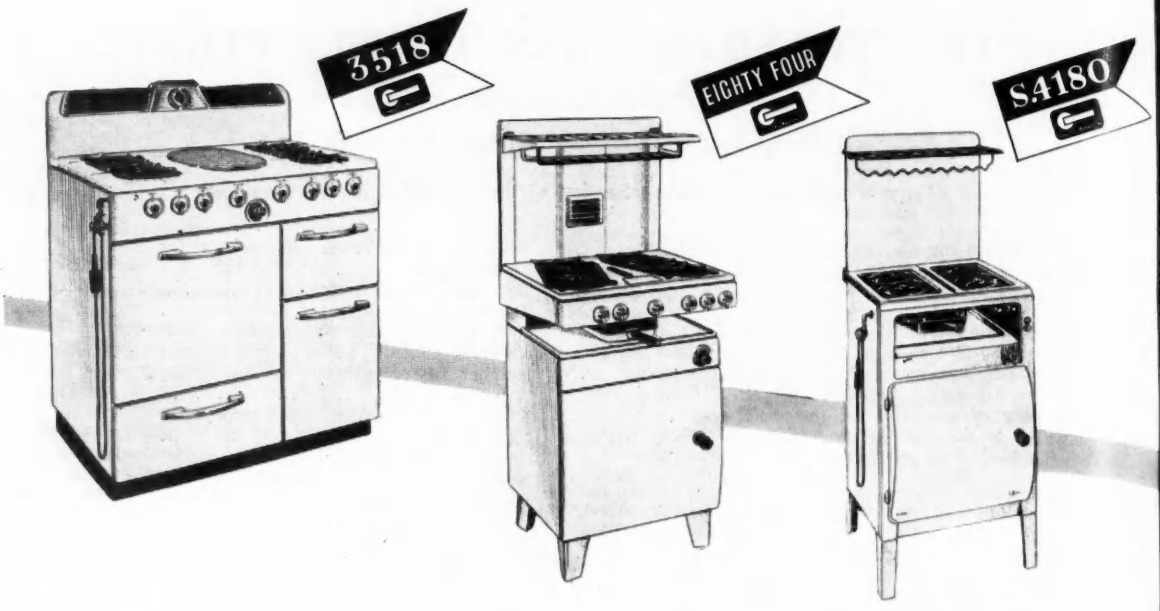
There is a tendency for the number of ordinary meters to increase, and the number of prepayment meters to decrease. The consumption per consumer on prepayment meters declined from 161 therms per consumer in 1947, to 140 therms per consumer in 1952, and it is particularly striking that there is a decline from 1951 to 1952 of 11 therms per prepayment consumer per annum. The ratio of prepayment to credit meters at Peterborough is varying at a greater rate than is shown to be general in the Gas Council report. In 1938 prepayment meters represented 65% of the total, and in 1952 only 49%.

## The Domestic Wash

It appears fairly certain that the trend of change from prepayment to ordinary will continue, and it may be said from our experience that this trend may also bring a decline in consumption per consumer. This may be hard to understand, as it would be anticipated that the number of additional appliances to the basic appliances for cooking and washing would be greater with those consumers using ordinary meters than with those using prepayment meters. Possible factors causing this decline may be the change-over from gas to electric lighting and/or cooking, and/or washing; the change-over from a Board black gas cooker to a more efficient private cooker (these incidentally, are some of the circumstances which bring about the change-over from prepayment to ordinary); and the general desire to keep the quarterly gas bill as low as possible. In this connection it is well to mention the importance of the gas load for the domestic wash. It is evident from our graphs of consumption that Monday is still the traditional wash-day, and our output on average on Mondays is higher by approximately 5% than Tuesday, Wednesday, Thursday, or Friday.

In assessing the future we should, of course, analyse the demand, and endeavour to decide which demand is likely to be difficult to maintain or increase, and which demand we are likely to hold or increase. In attempting to assess this problem, the general question of price is of paramount importance.

*Continued on p.* 688

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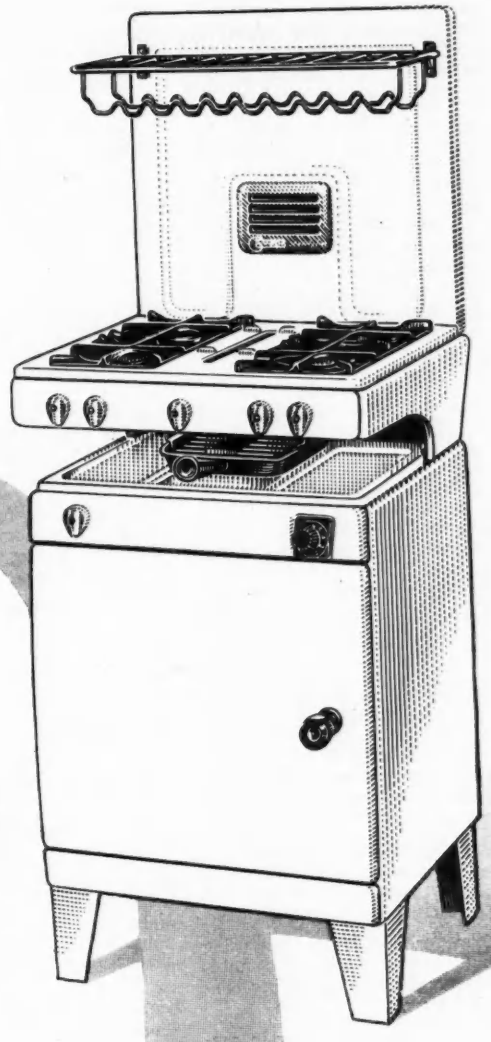

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We all appreciate that, in addition to the probability of having to cushion the shock of a selling war by the oil companies, there are the possibilities of relatively cheaper lower grade solid fuels being made by the Coal Board. While we may be in a position to hold and increase our general industrial load, a disproportionally high industrial load might be dangerous, particularly the industrial space heating load. The level of domestic consumption should be a guide to our progress.

In a survey of domestic consumption, it is interesting to compare the consumers using various appliances. Taking 318 houses on a post-war municipal housing estate, we find an average consumption per consumer per annum of 26,807 cu. ft., or roughly 134 therms. These 318 houses are known to have gas for cooking and washing only, with an occasional portable gas fire. The houses are otherwise fitted with electricity for lighting, and with power points in all principal rooms. They are mostly, if not all, provided with electric immersion heaters as an alternative means of hot water supply. There is only one room, *i.e.*, on the ground floor, with a built in flue.

Of the 318 houses in the above survey, approximately half are using cookers hired out by the Board (this prior to change of hiring policy), and the other half use privately owned cookers.

There was a decrease of 1,500 cu. ft., or 7½ therms, in consumption per consumer by those using private cookers against those using cookers hired out by the Board. It should be stated that the Board's cookers in the main are of a modern type, and the reason for the decrease may in some measure be assumed to be due to the quarterly hire purchase payments, and, of course, to the greater efficiency of the more modern thermostatically controlled cooker.

## Results of Survey

*Case A*—Taking a further 91 houses on another post-war housing estate, we find an average consumption per consumer per annum of 34,300 cu. ft., or 171½ therms. All these houses are fitted with Ascot multipoint water heaters as the sole means of providing hot water, and also gas is used for cooking and washing. An occasional gas poker, and a very occasional portable gas fire, are found.

In a survey of 574 houses using ordinary domestic gas appliances (cookers and washers) but with the addition of a sink heater only, we find an average consumption per consumer of 31,300 cu. ft., or 151½ therms.

*Case B*—In a survey of 213 average pre-war houses using ordinary domestic appliances, but with the addition of a multipoint water heater, we find an average consumption per consumer of 28,900 cu. ft., or 144½ therms.

*Case C*—In a survey of 232 pre-war houses similar to pre-war council houses, using ordinary domestic appliances but with the addition of a single-point bath geyser as the main means of hot water, we find an average consumption per consumer of 27,200 cu. ft., per quarter, or 136 therms. We find a negligible difference between those using prepayment meters and those using ordinary meters. It is significant that, taking a survey of the same houses for the financial year ended March, 1947 (*i.e.*, the peak year in consumption per consumer for prepayment meters), we find the consumption per consumer to be 31,800 cu. ft., or 159 therms. This means that in five years, with exactly the same appliances, there has been a decrease of 23 therms per annum, or 14.5% (near). This shows a steeper decline than the general one for prepayment meters over the same period, *i.e.*, 13% (near).

Taking a basic figure of consumption per consumer per annum of 134 therms on post-war council houses, it is disturbing to note that where gas is used as the main means of hot water supply, the consumption is only increased as follows:—

| | | | |
|---|---|---|---|
| In Case A | by 37½ | therms, | or 28% |
| ,, ,, B | by 10½ | ,, | or 8% |
| ,, ,, C | by 2 | ,, | or 1.5% |

My opinion is that with the average family using the average amount of hot water for baths and domestic purposes, in addition to gas for cooking, it would be difficult to manage with a consumption of less than 200 therms per annum. One may reach the conclusion that gas is being used only very occasionally for baths, and further conclude that increases in price of gas have been a dominating factor in reducing consumption.

We may have to make reservations in consumption loadings, as it is only in recent years that the consumption as a whole has been so finely divided. While we may find that transfers from one group to another may account for some of the increases or decreases, it is gratifying to note the increased demand by commercial consumers. It is most disturbing to note the drop in Central and Local Government consumption, while, of course, the most disturbing factor of all is the decrease in domestic consumption.

In a report to the previous Peterborough Gas Company, the then general manager stated that in the years from 1929 to 1938, while the number of consumers supplied by the company increased by 41.2%, the gas consumption generally increased over the same period by only 15.5%. These are figures requiring very serious consideration, and I recall the late Sir David Milne-Watson many years ago reminding the industry of the serious consequence of the decline in consumption per consumer.

What does the future hold for an industry with a continued increase in the number of consumers, increasing capital expenditure, and, at the same time, a lack of corresponding increase in revenue arising from consumption per consumer?

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METAMORPHOSIS OF AN INDUSTRY—

*Continued from p.* 684

The area boards would need the services of the local man with his local contacts, and he observed a tendency to the realisation that his job was useful. If the Boards realised this all would be well and they need have no fear.

**Mr. O. H. W. Boonham** (Cheltenham) said Mr. Dean referred mainly to the period 1939-1948. He thought the decline in some of the smaller works was taking place long before that. Many individual engineers realised the position and some works were taken over by larger neighbours and bulk supply mains were laid. Many works benefited by group organisations, but the parochial attitude of many made compulsory change of ownership essential.

## The Author's Reply

**Mr. Dean,** replying to the discussion, said several people had referred to the period of the decline and had said that a large amount of this decline was due to inability to get materials. So it was, but the effort people were putting into the job was equally responsible.

He had not intended to suggest that the forms sent out were intended to annoy. He realised that the people at the top had to know what was going on in the area, but it should be realised that some of the questions asked did, on the surface, appear to be unnecessary.

Regarding Mr. Verity's point, he thought they should consider the local man, but it should be borne in mind that just as he was a leading figure in the community he could be a good or bad influence. He must be 100% for the gas industry.

Discussing coke quality, he wanted to get out of the habit of selling gas and disposing of coke. They were selling gas and coke.

**Mr. J. W. Denton,** Chairman of the Section, expressed appreciation of Mr. Dean's paper and on behalf of the members of the Section thanked him for his work, careful thought, and the delightful way he had presented it.

# A Modern Grid Reception Station

By FOSTER ROBSON, M.C.,

Group Distribution Engineer, Wakefield Group, North Eastern Gas Board.

**From a paper to the Yorkshire Junior Gas Association**

THE handling of gas into a works from a bulk supply network is not a simple problem of blowing gas from the holders of one works to the holders of another. It must be planned. The gas taken from the grid should not be a greater amount than that put in. Therefore the receiving equipment used will be of a specialised nature, accurate and capable of perfect control. Normally such equipment takes two forms:—

(a) That of receiving gas at grid pressure and reducing it to a pressure suitable for feeding direct into the receiving station holders. Such equipment is normally termed 'low outlet pressure.'

(b) That of receiving gas at grid pressure and reducing it to a pressure suitable for feeding direct into a medium pressure district reinforcement main. Adequate arrangements are made for the peak and off-peak requirements of the reinforcement main. This equipment is normally termed 'high outlet pressure.'

Our study in this paper concerns the planning, sizing, and operation of the high outlet pressure equipment. To appreciate the method of working, the basic operation of a gas grid must be understood. Such a grid system is operating in the North Eastern Gas Board's area of the West Riding at the present time.

The term gas grid has of recent years been used to describe any system of intermediate or high pressure network of mains supplying gas from one or more of a number of main manufacturing centres to a ring of gasholder stations and district governors.

## Gas Grid Defined

The term gas grid in this paper is applied to a mains network into which gas is received in bulk at a more or less fixed rate over 24 hours from the producing stations. These may be either coke ovens or gasworks. The gas is delivered by these mains to a number of holder stations or gasworks at a predetermined rate over the 24 hours, the total rate of input per hour being equal to the total rate of output per hour, thereby maintaining a reasonable static set of pressure conditions throughout the network and avoiding peak loads. In charge of this operation is the controller, who, with his staff, regulates the output of gas to equal the input of gas throughout the 24 hours of the day and night.

In the North Eastern Gas Board's grid unit gas is compressed into the grid from six producing centres and is distributed to 22 separate holder stations and gasworks. Therefore, the type of receiving equipment installed at each works must be of a pattern such that quick alteration can be made to the input of gas to the works by the station attendant on instructions from the controller.

Input to a holder station must always be under control. In volume in cubic feet per hour it is normally equal to the day's requirements of the holder station divided by the 24 hours of the day. If holder storage at a particular works makes this impossible, and the grid input has to be increased to balance a very limited holder stock, peaks begin to appear. However, these can normally be absorbed by the reduction of input at a larger works. The controller considers his storage on a grid basis, not on a district basis, and he must be able to use such stock as he requires.

Our gas grid network delivers the gas into the holder station, through the reception handling equipment, at a volume in cubic feet per hour fixed by the controller. The district distribution network delivers the gas from the station to the consumer, irrespective of varying volume requirements. Our study is how to size and plan equipment to do this work so that the requirements of a constant grid input and a varying district demand can be met.

## Planning the Gas Load

In designing equipment of this nature, consideration must be given to the future requirements of the station. Any form of guesswork must be avoided. It cannot be assessed merely by taking, say, twice the present load. The result must be built up in conjunction with a survey of domestic and industrial development. This survey will reveal block volumes of gas that are required at certain points on the district. These may be divided normally into three phases in cubic feet per maximum hour.

(1) *Initial Loads.*—Those volumes in cubic feet per hour which would be supplied, if the existing mains were adequate, plus any load that will definitely materialise in approximately two to four years' time.

(2) *Interim Loads.*—Those volumes in cubic feet per hour about which definite information is available; gas loads, both industrial and domestic, which will be available in seven to 15 years' time.

(3) *Ultimate Loads.*—Those volumes in cubic feet per hour from about which nothing definite is known but which, after consideration of all information, should be planned for in the ultimate stage or 20 to 30 years' time.

The feeder mains are considered under the above headings. We decide whether high pressure, medium pressure, or low pressure. These mains will meet the peak load requirements revealed by the survey. The sum of all the loads the mains will have to carry will be accumulated at the works with the initial pressures at which they are designed to operate. Depending on the final design, gas will leave the works by pressurised feeder main and through the station governor or governors. Future considerations may require the feeder main to operate under low pressure conditions in the initial stage and medium pressure conditions in the interim and ultimate stages.

The volume of gas required by the feeder main added to the volume of gas required by the station governor or governors for each stage of development will give the total volume of gas required at the peak period of the peak day by the district from the station now, in the interim, and in the ultimate stage of development. It is on these maximum hourly figures that the equipment handling gas from the station to the district should be designed.

The design load, upon which he grid reception equipment is based, is the volume of gas required per 24 hours by the station to meet its full district supply commitments. This figure is normally arrived at in two sections:—

(a) *Domestic Load.*—The gas required for domestic purposes per maximum hour should be multiplied by a factor representing the number of peak hours running that it is estimated would equal the volume of gas consumed in 24 hours. In the Wakefield group these factors are:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (1) Initial stage: | maximum hour | × | factor | 10 | = | maximum day | | |
| (2) Interim | " | " | × | " | 9 | = | " | " |
| (3) Ultmte. | " | " | × | " | 8 | = | " | " |

This factor group for group can be determined only by experiment and should never be an assumed figure.

(b) *Industrial Load.*—The gas required for industrial purposes per maximum hour should be multiplied by the number of hours during which the process is in operation out of the 24. This may be 12 hours at 100% load and 12 hours at 80% load, and each load must be considered separately.

With the information available we can design the equipment to handle the volume of gas required by the station.

## Detailed Planning

To interpret the problems arising in the design of a station of this type I will explain the recent planning work carried out in connection with the design of a typical high outlet pressure grid reception station being erected in the Knottingley district of the Wakefield group.

The existing Knottingley station operates as a low outlet pressure unit and it has a maximum receiving capacity of 100,000 cu,ft. of gas per hour. When this plant was installed in 1939 the maximum day's requirements were in the region of 175,000 cu.ft. The most recent figure recorded was in the region of 1,450,000 cu.ft. This great increase is due largely to the rapid development during the past 10 years in the amount of gas used in the manufacture of glass and chemicals in the area. This large industrial load is fairly constant throughout the 24 hours of the day and all the factories are in constant production except during the normal bank holidays.

In 1948 a survey, of the type already outlined, was made of all industrial and domestic loads, and the following figures were revealed concerning the maximum day.

| Stage of Development | Period | Ex Works to L.P. Mains cu. ft./hr. | Ex Works to H.P. Mains cu. ft./hr. | Ex Works per Max. day cu. ft./day |
|---|---|---|---|---|
| (1) Initial loads .. | 1951-52 | 11,900 | 65,811 | 1,334,845 |
| (2) Interim loads .. | 1961-65 | 18,725 | 119,265 | 2,382,416 |
| (3) Ultimate loads .. | 1975-85 | 25,000 | 230,104 | 4,442,332 |

Under present conditions the gas supply to the Knottingley district is divided into two parts:—

(a) 10-in.—that which passes from the holder through the station governor and is mainly used by domestic consumers. This is an old supply and was laid when the old Knottingley Gas Company started.

(b) 18-in.—that which passes direct from the holder, therefore ungoverned and almost entirely used by industrial consumers. Certain district governors are located on this main and used to reinforce the low pressure mains system particularly where new housing development is taking place. The first portion of this main was laid in 1942 and further sections have been laid since that time as increased loads demanded.

From these facts it will be understood that the district is adequately mained and the problem was one of handling, at suitable pressures, the gas into and out of the station. It was decided to install new plant in a new house and remove that laid down in 1939 to another works, the basic operation of the new plant to be as follows.

The gas will be received into the station through a volumetric governor at a fixed rate over 24 hours as determined by the controller, the inlet grid pressure varying between 10 and 30 lb. per sq. in. This governor will be set by the station attendant and he will be able to observe the flow from a flow meter operating in conjunction with the orifice plate set in the measuring tube located immediately after the volumetric governor. On the end of the measuring tube is a relief governor, its purpose being to maintain a fixed set of pressure conditions across the orifice plate irrespective of pressure variations on its outlet.

The inlet gas stream is then passed through a Connersville meter which measures the volume of gas received into the station from the grid unit. It is on such measurement that the gas received from the grid is purchased by the district served, corrections being made for variation in temperature and pressure.

The gas stream will now pass into the district main at such a volume as set on the volumetric governor. The pressure at which this main is to operate is set on a second relief governor which, if the volume required by the feeder main is less than that volume coming in from the grid, will open and allow the excess to pass into the holder. If, however, the volume required by the feeder main is in excess of that received from the grid, the relief governor will remain shut and the extra volume required will be boosted from the holder into the feeder main. Arrangements are made for the automatic starting and stopping of the machine, depending on the rise and fall of pressure in the feeder main.

The new district governor, to serve the low pressure district mains, can be supplied either direct from the gasholder or through the booster, should any occasion make this necessary.

## Sizing and Selection of Equipment

To illustrate the sizing of the equipment and its selection, I have considered the new booster and station governor first, then I have worked in from the inlet to the volumetric governor through the meter to the commencement of the feeder main. The reason for this is that the volume of gas required by the district at the start of the feeder main are those on which the whole station is designed.

The volumes and pressure required are as follows:—

| Stage of Development | Ex Works to L.P. Mains cu. ft./hr. | Ex Works to H.P. Mains cu. ft./hr. | Pressure reqd. on outlet S.G. in. w.g. | Pressure reqd. on Mains in. w.g. | Ex Works per max. day cu.ft./24hr. |
|---|---|---|---|---|---|
| (1) Initial loads .. | 11,900 | 65,811 | 5.5 | 12.5 | 1,334,845 |
| (2) Interim loads .. | 18,725 | 119,265 | 5.5 | 19.06 | 2,382,416 |
| (3) Ultimate loads .. | 25,000 | 230,104 | 5.5 | 47.20 | 4,442,332 |

*Booster.*—This unit has two duties to perform:—

(a) It must be capable of meeting the whole of the volume of gas required by the feeder main and the low pressure district during any time of the three stages of development. This situation would arise if the grid supply was shut off due to a grid break or when maintenance work was being carried out necessitating a temporary shut down.

(b) It must be capable of supplementing the constant supply from the grid when this falls short of the feeder mains peak requirements.

The actual volumes of gas handled in fulfilling the first duty would be:—

| | Initial conditions | Interim conditions | Ultimate conditions |
|---|---|---|---|
| Volume to L.P. supply, cu. ft. per max. hour .. .. .. .. | 11,900 | 18,725 | 25,000 |
| Volume to H.P. supply, cu. ft. per max. hour .. .. .. .. | 65,811 | 119,265 | 230,104 |
| Total volume ex works, cu. ft. per max. hour .. .. .. .. | 77,711 | 137,990 | 255,104 |
| Outlet pressure required, in. W.G. .. | 12.5 | 19.06 | 47.20 |

To fulfil the second condition the booster must be capable of handling very small volumes of gas to reinforce the constant supply received from the grid at the pressures outlined above, during the various stages of development. To handle this work it was decided to install an electrically driven J.H.68 5-stage Rateau turbo-booster by Bryan-Donkin to the following specification:—

One stage machine 120,000 cu. ft. per hour 8 in. W.G. pressure lift.
Three „ „ 200,000 „ „ „ „ 40 „ „ „ „
Five „ „ 320,000 „ „ „ „ 54 „ „ „ „

This unit, being a fan, is non-positive in operation and would work over the full volume and pressure range required. A fan is the most suitable booster for this work as the volumes

to be handled per hour are large and the pressure lift is comparatively small.

*Station Governor.*—This would be required to operate with inlet pressure from the holder, or, on rare occasions, from the booster, the actual conditions being as follows:—

| | Initial conditions | Interim conditions | Ultimate conditions |
|---|---|---|---|
| Volume, cu. ft. per hour .. .. | 11,900 | 18,725 | 25,000 |
| Inlet pressure, in. W.G. .. .. | 5.5 to 20.5 | 5.5 to 52.5 | 5.5 to 66.5 |
| Outlet pressure, in. W.G. .. .. | 5 | 5 | 5 |
| Minimum pressure loss .. .. | 0.5 | 0.5 | 0.5 |

To carry out this work a 10 in. diaphragm station governor by Bryan-Donkin is to be used. With this type of station governor, inlet pressures of up to 5 lb. per in. can be handled with perfect ease and rapid rises in inlet pressure easily controlled.

*Volumetric Governor.*—This must pass a fixed volume of gas, irrespective of variations in inlet and outlet pressure. It must be large enough to meet the station's full daily requirements in gas for a number of years to come. The detailed design load figures are as follows:—

| | Initial conditions max. day | Interim conditions max. day | Ultimate conditions max. day |
|---|---|---|---|
| Volume, cu. ft. per hour .. .. | 20 | 20 | 20 |
| | 1,335,000 | 2,382,400 | 4,442,332 |
| | = 20 | 20 | 20 |
| | = 66,750 | = 119,120 | = 222,117 |
| Inlet pressure, lb. per sq. in. .. | 5-30 | 5-30 | 5-30 |
| Outlet pressure, in. W.G. .. .. | 12.5-20.5 | 20-52.5 | 50-66.5 |

It will be noted that the maximum day for each development stage has been divided by the figure of 20. This is to ensure that the volumetric governor is large enough to guard against a possible shut down of four hours in the case of a grid break, and it also enables the controller to make up stock lost during the breakdown. To do this work a 14 in. Reynolds high outlet pressure volumetric governor by Bryan-Donkin is to be installed. With this type of equipment, full control, as required by the grid unit, will always be maintained at the station.

*Measuring Tube Relief Governor.*—The purpose of this governor is to keep up fixed pressure conditions across the orifice plate in the measuring tube, between the outlet of the volumetric governor and the inlet to the relief governor, despite the fact that the input flow of gas will vary and the pressure on its outlet will rise and fall.

The volume requirements will be within the maximum and minimum for the volumetric governor and its bore will be equal to the volumetric governor. A 14 in. diaphragm type relief governor by Bryan-Donkin was selected.

*Meter.*—All gas received by a station, from the grid, must be measured, and at Knottingley we needed a meter to operate accurately under the following conditions:

Pressure, all stages, 12.5 to 66.5 in. W.G.

Volume, all stages, 60,000 to 225,000 cu.ft. per hour.

A Holmes-Connersville 16 in. by 48 in. meter was chosen, arrangements being made to allow for variations in temperature and pressure.

*Relief Governor.*—The operating pressure of the feeder main is set on this relief governor. It must be able to relieve all gas not required by the feeder main into the holder during off-peak periods, but it must remain shut when the grid input falls short at peak times or is restricted because the controller wishes to use his Knottingley stock. It would have to operate under the following conditions:—

Inlet pressure, all stages, 12.5 to 66.5 in. W.G.

Volume, all stages, 0 to 250,000 cu.ft. per hour.

A 10 in. diaphragm type relief governor by Bryan-Donkin was chosen for this work.

All six items described will be provided with adequate inlet, outlet, and by-pass valves to facilitate maintenance. In the new house in which they are being installed, the equipment, valves, and connections are all above ground. The booster and the meter are set at a higher level, surrounded by steel mesh flooring. All control and instrumentation will be centred in the control room where a full panel will give the attendant all the information he needs on flows and pressures.

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## INTEGRATION IN CORNWALL

GOOD progress is being made with development and integration of gas supplies in South Cornwall. Already carbonising plant extensions at Penzance and Newquay are completed, and a site for a new modern works at Newham has been secured and planning has reached an advanced stage.

As none of the existing works was capable of supplying all the gas required in South Cornwall, nor could any one be developed to do so, the South Western Gas Board faced a particularly difficult problem in a territory where some 30,000 consumers depended on a gas supply from 19 producing stations, most of which were old and inefficient.

In addition to the problem of out of date plant, many of the distribution systems were inadequate to meet modern requirements. The Board, therefore, had to plan, not only for interlinking mains throughout the sub-division, but to take immediate steps to reconstruct much of the existing pipe work.

New interlinking mains are in use between St. Austell and St. Blazey; St. Ives and Hayle; and the main between Hayle and Penzance is almost completed. Work will commence immediately on the Hayle/Redruth section, to be followed as quickly as materials are available by the Redruth/Truro and Truro/Falmouth lines.

It is not intended to await completion of the whole scheme before the full benefits of the development are made available to the public. Every effort will be made to connect towns and villages progressively, and other property to the network as it is constructed and tested.

To meet the unsatisfactory state of affairs connected with overloaded conditions in a number of mains, services and internal installations on some domestic property, special reconstruction teams are being organised. These teams will consist of main and service layers, fitters, home service advisers, and salesmen to advise on the use of equipment. They will work systematically from town to town, reconstructing or relaying mains and services where necessary, and refitting consumers' equipment where required. Mobile showrooms will be made available and, where necessary, home service advisers will call on consumers and advise them on the use of domestic equipment, old or new.

All this improvement work and service to the consumer will be provided free of charge. The Board is conscious that there are many black spots in South Cornwall, but it intends to leave no stone unturned to provide a dependable and economic fuel service for the domestic, commercial, and industrial user.

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## INSTRUCTIONAL FILMS

A SERIES of new instructional films on iron and steel making processes is being prepared by the British Iron and Steel Federation. Three films on blast furnaces have already been produced and are available for loan. They are:—'What goes into the Blast Furnace,' 'Making Iron' and 'What comes out of the Blast Furnace.' All are 16 mm. sound films, black and white, the first two of 15 minutes duration and the last of eight minutes. The films, and subsequent ones in the series, are intended to cover the subjects of the City and Guilds iron and steel operatives' course, and to be used in class-rooms in conjunction with other federation visual aids. Notes are being prepared for instructors. Information about borrowing the films may be obtained from the local Federation Training Officer, or from the Training Department of the Federation, Windsor House, 46, Victoria Street, London, S.W.1.

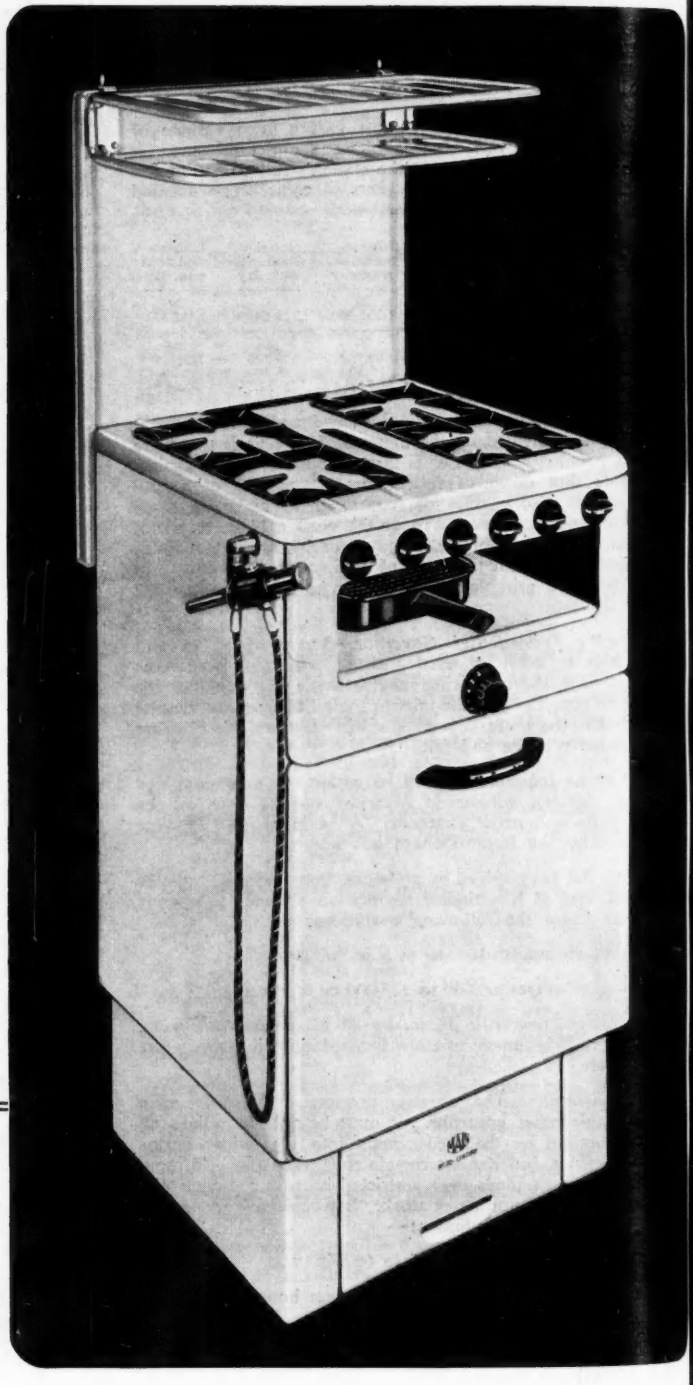
# No. 20 CENTURY

## The luxury Cooker at a moderate price

**PROVIDES A HIGH STANDARD OF PERFORMANCE COMBINED WITH EASE OF MAINTENANCE**

*The No. 20 Century is of advanced design and constructed primarily of sheet steel. No chassis is used; its great strength and solidity being achieved by the use of large steel panels with deep flanges bolted together.*

The overall dimensions of the Cooker are 36 ins. high, 20¾ ins. wide and 20 ins. deep. With backplate and platerack the height is increased to 53 ins. and the depth to 20¾ ins. overall.



MAIN

R. & A. MAIN LIMITED
LONDON AND FALKIRK

# Its roomy oven embodies novel features

The No. 20 CENTURY oven is of large capacity: 17″ wide, 15¼″ deep and 14″ high.

Its single burner is at the back and is bolted to a shield, which makes its removal and replacement very easy. Ignition of the burner is by means of a flash tube from a hole at the front of the oven base. The flue outlet from the oven is at the top, near the front, and the products are finally discharged upwards through a vent in front of the backplate, thus helping to warm anything on the platerack.

This combination of burner and flue system ensures a high standard of cooking performance at minimum gas consumption and enables a large cake tray (13½″x10½″) to be used. It also allows the cooker to be fitted flush to the wall, without risk of staining it.

The thermostat head has a " pull-off " knob and the valve can be removed for inspection or cleaning without disturbing the calibration. Its rod, housed in the flue above the oven crown, cannot be interfered with by the user. This, together with the short embossed runners on the side linings and the large radii at all corners and joints, makes cleaning of the oven interior particularly easy.

The oven shelves are designed to minimise tilting and to ensure correct positioning of the cake tray and the meat tin.

The bottom-hinged door is self-sealing. It has a non-rusting aluminium frame and its counter-balance springs are housed in the plinth base and are easily accessible.

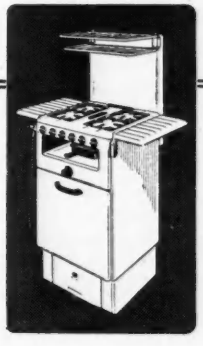
A levelling strip is provided in the plinth base.

Provision is made for fitting a lighter at the left-hand side of the cooker.

**Fitted with Hotplate Extensions**

**IN CREAM Vitreous Enamel**

# Gas Cooker



# Automatic Calorific Value Control

By K. R. MORTIMER,

Engineer and Manager, March, Cambridge Division, Eastern Gas Board.

**Paper to the Eastern Section of the Institution of Gas Engineers**

DILUTION of gas manufactured in retort houses is no new thing, and in presenting this paper the author is not claiming the introduction of anything new, but merely wishing to place on record a simple and satisfactory method of controlling dilution which he has been able to adopt at March, and of which system the capital and running costs have proved to be very low.

It will be understood by the term dilution that the process consists of reducing calorific value to a required level. At the undertaking in question, gas is made in a modern well-designed continuous vertical retort house, housing six 44 in. upwardly heated continuous vertical retorts, carbonising South Yorkshire coals. It has been found that when the throughput of these retorts approaches, or is in excess of, rated capacity difficulty is experienced in keeping the calorific value of gas down to the declared value of 470 B.Th.U. with the particular coals in use. As further dilution by water gas produced *in situ* in the retorts was not found to be possible (extra steam remaining undecomposed) there were only two other diluents readily available—producer gas and air, the latter of which, for obvious reasons, was not seriously considered. Obviously, the thermal output of the installation as a whole would be increased by the therms of producer gas added, whereas there would be a most deleterious effect on works plant, holders, and distribution system, together with a loss of therms, by the use of air. This loss can be expressed as for every 0.5% of unnecessary oxygen in town gas a loss of two therms per ton occurs, or, to put it another way, a reduction of 0.5% of oxygen supplied as air in town gas would result in a calorific value increase of 10 B.Th.U. per cu.ft. (1).

Dilution by producer gas, as already stated, gives additional therms per ton. Bearing in mind the well-known rule that over the normal calorific value range of 450-550 B.Th.U. the maximum thermal yield of a retort is constant, it is obvious that as producer gas is added, additional therms will become available in strict ratio to the producer gas added, and thereby increase the overall output of the plant—incidentally, a not unimportant factor at March.

The average producer gas addition is in practice approximately 7% by volume, which is equal to an extra 1.5 therms per ton of coal. In the case of straight horizontal gas, this figure would, of course, be higher—in the order of 9-10% of the gas made.

I would like to bring this introduction to a close by quoting a statement made in 1946 by G. M. Rimmer: 'It is, however, obvious that the tendency is towards the use of robot plant' (2). With due exercise of discretion in the choice of our robots, I believe this to be true.

## Types of Automatic C.V. Control

Before giving details of the method of control finally adopted at March, I feel that a few comments on some systems adopted elsewhere, details of which have been published, may be of interest. It should be made perfectly clear at the outset that the March system was, in effect, developed from first principles, and that no points have been knowingly taken from any other system. I would also like to acknowledge the very willing co-operation given by the Sigma Instrument Co., whose B.Th.U. recorder forms the basis around which the controller operates.

All automatic C.V. controllers have some type of relay system and may be broadly divided into two groups—(a) those which do not require electricity for their operation, and (b) those which are essentially electrical.

Among the former we have the new Kent-Sigma device using the Kent Mark 20 air-pressure operated controller. This appears to be a very satisfactory device, giving proportional integral and first derivative functions of the deviation from setting, and is capable, therefore, of giving very close continuous control.

The Sigma Company has a non-electrical system which operates by means of a 'gas relay' and uses a bell type gas-operated governor as motive power for a controlling butterfly valve (3).

The 'Tamworth' automatic control was described by the late G. M. Gill, and, as with the Sigma system, uses a bell type governor to effect movement of the butterfly controlling the admission of diluent gas (4). This device is very simple in principle (and could be made up from oddments to be found on most gasworks, plus a little ingenuity, and the necessary Sigma B.Th.U. recorder for control purposes).

The electrical types are capable of almost endless variation, but are usually based on Sigma or Fairweather calorimeters as the controlling instrument, with either a motorised butterfly valve in the diluent gas feed main, or a motorised steam valve in the producer steam supply, as in the Dursley system (5). The control of calorific value would also appear to be a very promising field for electronic experts.

S. H. Stokes, of the East Midlands Gas Board, has described an automatic control used in connection with producer gas dilution of coke oven gas (6). In this case, movement of the Sigma recorder pen opens and closes the circuit of a motorised steam valve on the producer gas generator, or alternatively, by means of a two pole change-over switch, can be caused to operate a 4-in. motorised butterfly valve inserted in the by-pass of a Connersville exhauster, which is used when a standby suction gas plant is operated. Mr. Stokes draws attention to the fact that prior to this arrangement, the calorific value of the coke oven gas was broken down with air. Producer gas dilution on the other hand has given him an extra 15 mill. cu.ft. of gas per annum, and this has been made available at low cost.

In all cases where automatic control is instituted, it is important that the distance/velocity lag is as small as possible, as otherwise variations above and below the desired calorific value of the gas at inlet holders may be considerable.

## Control Evolved at March

Some time ago we installed the Sigma light indicating system, which gives distant indication of variations in quality from the standard value by showing a red light when the quality is too low, a green light when the quality is too high, and a white light when the quality is satisfactory. The indicator light was installed in the managers office, and, while of practical value, its use was found to be limited at the maximum, to the time when the manager was in his office, and also its use was further limited by the fact that, when indicated, the variation of quality was a *fait accompli*. The next logical development was to place the indicator lights at a point where the leading stoker could have them under continuous observation and utilise manual control of producer gas dilution. This was tried, but owing to the multifarious duties of such an employee on a small works, and the frailty of human nature, the results left much to be desired. It was at this stage that it was decided to investigate

the possibility of utilising the impulses actuating the lights to operate an automatic control signal, thereby eliminating the human element and obtaining control with the minimum time lag consequent on C.V. variation.

The standard type of electric contact 'head' made by the Sigma Company for the light signalling device is mounted on top of a Sigma B.Th.U. recorder case and connected to the pen actuating arm by a light rod. Movements of the pen give motion to one or other of two sets of contacts mounted on scissor arms in the 'head,' thus transmitting current to the motor of a 4-in. motorised butterfly valve mounted in the producer gas main at inlet condensers. This is so wired that the reversing motor fitted opens or shuts the valve according to the quality of gas as indicated by the recorder.

The degree of movement of this valve is adjusted by means of two mercury switches, one for the opening movement and one for closing. Both switches are mounted on an arm fixed to the spindle of the butterfly, and a radial motion is given as the valve itself moves. These switches also serve to isolate current from the motor when the valve has operated, as otherwise current would continue to flow through the reversing motor until the calorific value changed sufficiently to open again the contacts on the B.Th.U. recorder 'head.'

Control of the steam to producer is not possible in this case, as producer gas is taken from the main cross flue of the producers serving the retort setting, and such an arrangement would seriously interfere with heats.

The greatest difficulty has been and still is, the distance/velocity lag, as for various reasons our Sigma control is at one end of the works and the point of producer gas admission at the other end. The question of supply point for the calorimeter has to be carefully considered—for example, purifier air admission must be made before the supply point. It is worth noting here that the Sigma B.Th.U. recorder has been found a most satisfactory instrument for controlling purposes, as it has a very small time lag.

Doubtless many improvements could be suggested to this system, but, although many have been considered, they all involved some complication in addition to increased cost, and it has therefore been kept to the essentials as outlined here in order to keep the whole device as simple as possible, so that it is capable, if necessary, of adjustment by any intelligent person. In practice it has been found that the cleaning of switch contacts on the calorimeter switch head at six-weekly intervals is the only routine attention necessary, apart from the regular daily check given to Sigma calorimeters.

## Results Achieved

A C.V. record of the quality at inlet purifiers is an almost pure sine curve. This curve has a maximum variation of 20 B.Th.U. either way above and below the required value, this wave depth varying as the time lag—*i.e.*, the greater the gas velocity, the smaller the amplitude of the curve. The contacts are adjusted to operate at 5 B.Th.U. on either side of the standard. The additional deviation obtained is due to the distance/velocity lag and the lag of the instrument itself. The sine curve is typical of the employment of the butterfly valve control of diluent admission.

It was at first thought that the magnitude of this sine curve would prove a serious disadvantage, but in practice this has not been realised. A chart of the C.V. of town gas at outlet holders shows that nearly all traces of the curve have disappeared. The holder capacity at March is small, representing 55% of maximum day. The sine curve is flattened to some extent by mixing in the purifiers, station meter, and largely in the holders, to produce almost a straight line at inlet to town distribution system. A formula evolved by Dankwerts and Sellers relates the damping effect of a holder on such a curve to the holder capacity and the rate of gas flow and gives a good indication of the variations to be expected in the C.V. of town gas when operating a control giving varying quality but following the sine curve form (7).

The damping effect recorded by Dr. E. Johnson at Spenborough is fully confirmed by experience at March, where it was further increased by drawing gas for the controlling calorimeter from inlet purifiers.

To critics of the use of producer gas as a diluent, and to others, it may be of interest to observe that the average specific gravity of town gas at March over a period of 15 weeks recently was 0.512, and over the same period the Wobbe Index varied only from 648 to 680 with an average of 663. This was achieved on gas maintained very close to the declared calorific value of 470 B.Th.U. It will, of course, be obvious that no automatic controller can be of service if the principal source of gas falls below the required standard, but, even so, automatic action has the advantage that the calorimeter notices this at once, and cuts off the diluent gas supply, whereas with manual control it is possible for failure or delay in observing such a fall in value to have serious consequences.

## Conclusion

The question of dilution to obtain uniform calorific value is by no means confined to continuous vertical retorts; in fact, I think it is fair to say that all other forms of gas-making in use at small works show wider and more frequent variations of calorific value than do continuous vertical retorts.

This paper has been presented in the hope that it may be of some assistance to those interested in similar problems, particularly on small horizontal works in which it is suggested that the requisite producer gas be obtained from the existing built-in producers. Should these, as occasionally is the case, be insufficient, it might well be that extra capacity could be obtained when the next reconstruction is undertaken. I would add that I feel this problem to be one of paramount importance, particularly so as under sections 55 and 56 of the Gas Act, 1948, the Minister of Fuel and Power has authority to carry out tests on gas supplied by area boards for the purpose of ascertaining whether it is of the declared calorific value, and it would appear that this is likely to be applied universally within five years of vesting date.

There is also, as has already been pointed out, the obvious advantage of improved thermal yield and uniform quality, both of which are an advantage to both area board and consumer. Further, the automatic control of calorific value need not be confined to dilution by producer gas, but one of these systems described could be used to control the admission of B.W.G. or C.W.G., or even for the enrichment of B.W.G. with butane vapour (7).

The advantages of some system of automatic control such as that outlined, over the more usual manual control, would, in my opinion, make well worth while the relatively small expenditure necessary.

The cost of equipment at March was approximately £40, of which half was accounted for by the butterfly valve and reversing motor. It should be noted in this connection, however, that the wiring between the Sigma calorimeter and a point adjacent to the motorized butterfly valve was already in existence, having formed part of the discarded Sigma light indicator system. Labour added a further £8.

### BIBLIOGRAPHY


(1) F. B. Richards—'Carbonisation from a Plant Contractor's Viewpoint'. (Trans. Inst. Gas Eng. 1937-38).
(2) G. M. Rimmer—'Electricity in the Gas Industry'. (Trans. Inst. Gas Eng. 1946-47).
(3) *King's Manual of Gas Manufacture*. Part X.
(4) G. M. Gill—'A Manual of Carbonisation in Horizontal Retorts'. Published by Walter King, Ltd.
(5) Literature published by the Sigma Instrument Co., Ltd.
(6) S. H. Stokes—'Producer Gas Dilution of Coke Oven Gas'. (Trans. Inst. Gas Eng. 1948-49).
(7) E. Johnson—'Manufacture of Butane Enriched Blue Water Gas on Small Undertakings'. (Trans. Inst. Gas Eng. 1952-53).

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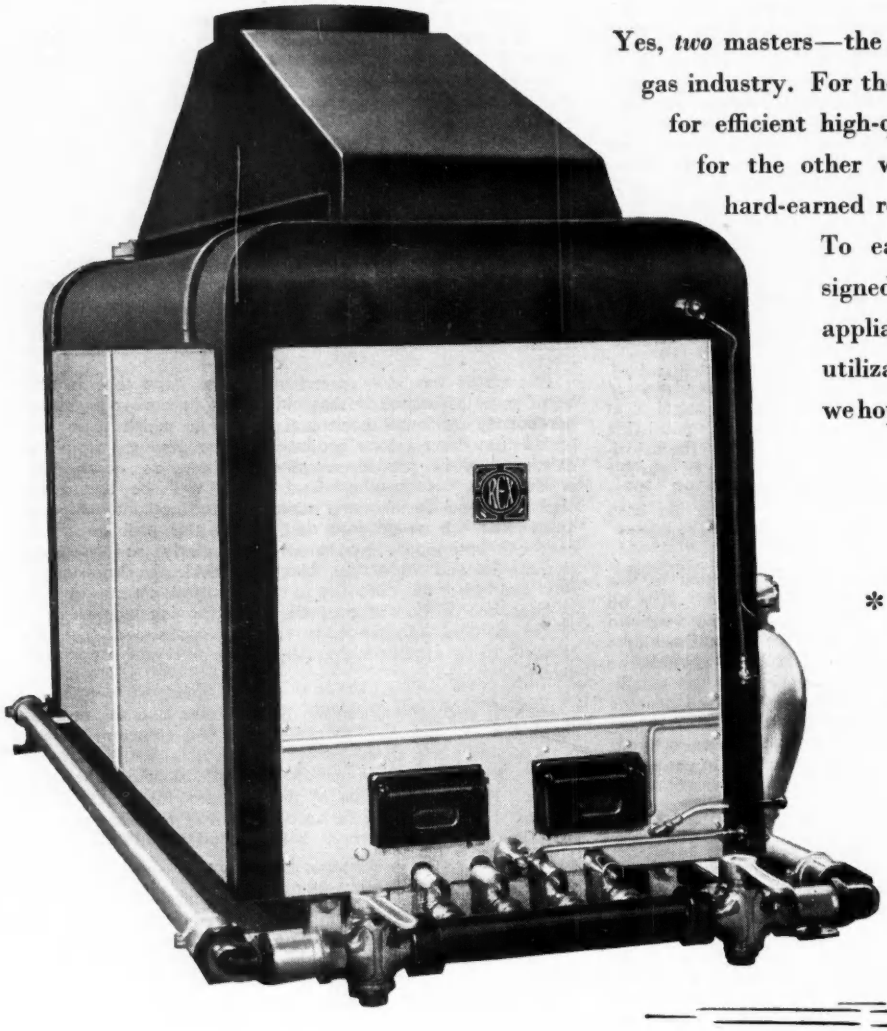

Yes, *two* masters—the general public and the gas industry. For the one we meet the need for efficient high-quality gas appliances; for the other we help to maintain a hard-earned reputation for integrity. To each we offer well designed, well-made, reliable appliances for the economical utilization of gas; to both—we hope—we give satisfaction.

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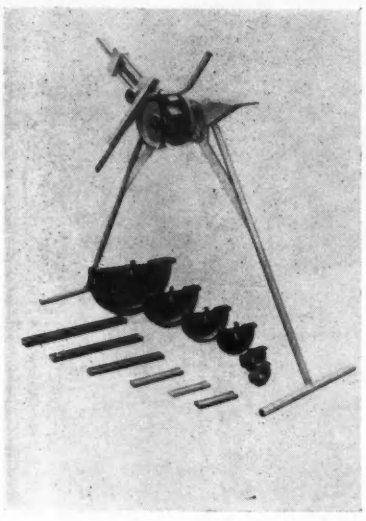
# TRADE NEWS

## 'Truset' Bending Machine

ECONOMY in tube bending, especially where off-set bends are required, can only be effected when the straight length of tube between the bends is as short as possible. To tackle this problem, Chamberlain Industries, Ltd., have designed and produced the 'Truset' bending machine incorporating an improved back stop (the subject of patent No. 637,943) with the centre forming block. The idea is based on the back stop being as narrow as possible and yet so designed as to give the necessary grip and support to prevent slipping and distortion to the tube during bending.



*The 'Truset' bending machine and stand*

Precision bending to accurate dimensions is ensured by the back stop, attached to the tube former, adjusting its grip automatically in accordance with the load applied, a feature which will be at once appreciated by engineers who have suffered with tube slip. Formers are available for the bending cold and unloaded through any angle up to 180° of tube sizes up to a maximum of ¾ in. N.B. gas tube and 1½ in. diameter in copper and light gauge tube. Another advantage of this machine is the design incorporated in the centre pin and handle to ensure that the correct angle of lead is maintained at all times. Right and left hand bends well beyond 180° can be produced in any completed form.

The machine consists of two main components, the base and bending arm. The base is circular and carries lugs suitable for universal mounting on bench, vice, or bending stand, and around the base are holes for a stop-pin, which, when used in conjunction with an additional stop screw on the bending arm, allows adjustment to any angle for repetition work. The bending arm, rotating about a centre-pin fitted to the base, consists of two accurately machined steel bars carrying an adjustable bending pin, fitted into the head block at one end, and the handle block at the other, this design rendering the arm extremely robust. A light steel fabricated bending stand, illustrated, can also be supplied with the machine, and is capable of withstanding the most severe usage. The principle of this stand is that it becomes complete only when fitted to the machine, thus eliminating large locating plates, and when dismantled, becomes merely two tubular legs suitable for easy transportation. A small pipe vice can also be supplied for mounting on the stand so that the tube can be secured for further processing.—*Chamberlain Industries, Ltd., Staffa Works, Leyton, London, E.10.*

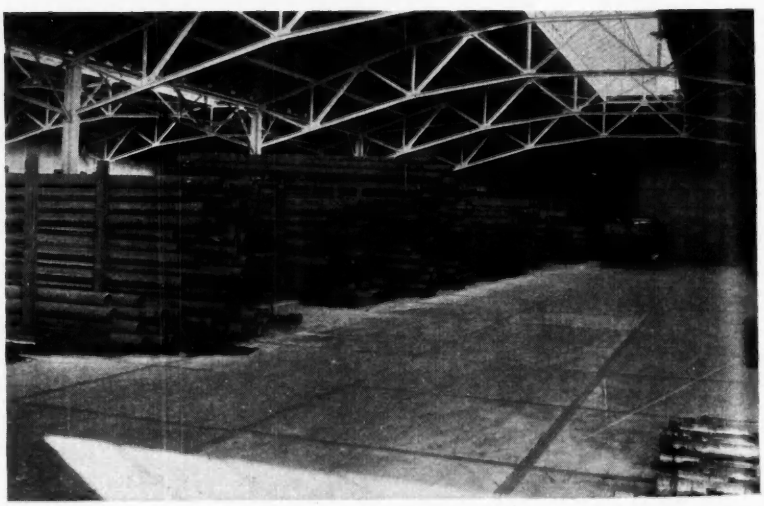
## Eversheld News

EVERSHED & VIGNOLES, LTD., have launched under the title of *Eversheld News* a new pictorial publication of news and notes, facts and figures, practice and policy, pertinent to the instruments, employees, dealers, agents, and customers of the company. It is intended as a direct means of communication to foster goodwill and a closer and more intimate relationship between the head office in London and all the company's friends throughout the five continents. The issue announces three new publications describing instruments manufactured by the firm: Publication No. 269 explains in full the use, service and adaptability of the "Ducter" low resistance testing set, and is fully illustrated. Publication No. 253 is a comprehensive pictorial survey of remote indication and centralised control. Publication No. 266 is a detailed descriptive catalogue of the Eversheld electronic repeater. These catalogues can be obtained on application to *Eversheld & Vignoles, Ltd., Acton Lane Works, Chiswick, London, W.4.*

## Stelcon Floors

STELCON (INDUSTRIAL FLOORS), LTD., are about to market a product which is quite new to this country and which will be sold as the 'Stelcon' steel clad raft, which will make it possible to put down industrial floors in a minimum of time and work on them immediately, without the necessity for a concrete subfloor. The rafts combine sub-floor and wearing surface, and at the same time they are mobile. Simply and quickly laid on a bed of sand evenly compacted over topsoil, they form strong, level floors capable of resisting heavy wear.

They are large concrete slabs doubly reinforced throughout, bound by angle iron and have the 'Stelcon' steel clad wearing surface. Each raft weighs about a ton. In new construction, the floor can be put down as the first building operation, thereby hastening and facilitating all future work. In a typical example a new factory was built round and over the 'Stelcon' raft floor; the method of construction thereby made possible reduced the total building costs by 7%. Furthermore, the floor can be rearranged subsequently, as required, to meet altered layout of plant. Alternatively, if subsidence occurs in the subsoil, the floor level is restored by the simple expedient of raising the necessary number of rafts, filling in with more sand and re-laying the rafts in position. The rafts are precision-made to a fine tolerance. Over 500,000 sq. yds. of 'Stelcon' steel clad rafts have been laid on docks and in factories since the war, including the docks at Rotterdam and Amsterdam; and there are also many such floors, now 16 years old, which have not cost one penny in maintenance.—*Stelcon (Industrial Floors), Ltd., Cliffords Inn, London, E.C.4.*



*Stelcon steel clad rafts provide the flooring of a pipes and fittings shed*

## Church Heating by Radiant Panels

A MORE than usually attractive brochure by Bratt Colbran, Ltd., deals with the subject of church heating by overhead radiant panels, which, it is stated, can be installed quickly and easily in church buildings at a cost that can be as much as 50% lower than many other heating systems. The brochure is illustrated by a series of photographs of church interiors from many parts of the world, and particularly striking are the natural colour tones which have been introduced into some of the illustrations. This system of heating is so clearly suitable for churches that no special explanation of it is called for here. Suffice it to say that its suitability lies in the fact that individual portions of the building—whether it be for mid-week services in the Lady Chapel, christenings or vestry meetings—can be heated without recourse to heating the whole building, with an obvious saving in cost. Installation is simple and does not affect the normal use of the building; nor does it entail unnecessary excavation or damage to stonework. Once the system is installed it will give many years of reliable service with minimum maintenance.

## Fluxite

FLUXITE paste, which has been in use for more than a generation, now has a staunch companion—the new Fluxite soldering fluid. Fluxite fluid will undoubtedly strengthen and extend the reputation for dependable quality that has long made Fluxite a household name in soldering and the automatic choice of Government works, engineers, and industrialists, as well as of the small man round the corner.

Fluxite soldering fluid will be welcomed by those who want improved results when dealing with long seams and large surfaces. A special wetting agent ensures that Fluxite fluid stays put, whether applied by dipping or by a single stroke of the brush. It is clean, quick and economical, and cannot poison the solder. The makers' experience and resources guarantee the high standard of excellence associated with the name Fluxite.

The Fluxite Quins, those active imps whose adventures are a looked-for feature of the Fluxite advertising, will see to it that maximum reader interest is focused on Fluxite soldering fluid in the national Press. Attractive three-colour tins are available in the standard sizes—4 fluid oz., 8 fluid oz., 20 fluid oz. The fluid is also available in 1 gal. cans and 5 gal. and 40 gal. drums.—*Fluxite, Ltd., 63, Bermondsey Street, London, S.E.1.*

## Refractory Orders

THE LEEDS FIRECLAY CO., LTD., reports that among important coke oven contracts now being supplied with Best Wortley refractories are Woodall-Duckham Co., Avenue contract for 120 ovens; and Coppee Co. (Great Britain), Ltd., Lambton contract for 52 ovens, both for the National Coal Board.

Other large contracts for Best Wortley refractories now being undertaken include the East Greenwich contract of Simon-Carves for 22 ovens for the South Eastern Gas Board and the new Shotton works of John Summers & Sons, Ltd., for 88 under jet ovens being installed by Simon-Carves, Ltd., where the following refractories have been supplied—Cover blocks, 287 tons; regenerator wall blocks, 3,766 tons; gas nozzles, 338 tons; regenerator fillings, 2,269 tons; and fireclay cement, 1,390 tons.

## Power Gas

THE POWER-GAS CORPORATION, Stockton-on-Tees, has opened a permanent engineering exhibition at its works to give visitors an insight into the firm's activities. The firm exports goods to more than 20 different countries, and there is a constant stream of visitors from all parts of the world. The exhibition has diagrams, photographs and models of manufactures for the iron and steel, chemical, petroleum, gas and other industries. From a balcony adjoining the exhibition room, it is possible to see the premises covering about 23 acres. On the balcony also is a model of the proposed new works on a 100 acres site and on which work started three years ago. About 300 people are employed in the section already opened, but the scheme will take up to 20 years to complete.

## Radiation Ltd.

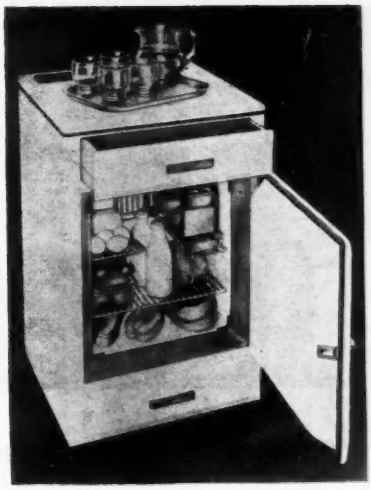
DURING THE WINTER, Mr. C. G. S. Rolls, Technical Representative, Radiation Ltd., gave talks to sales and service staffs in two tours of the Wales Gas Board area. Using a Bedford 'Utilicon' vehicle, he took a 3518 range and an Eighty Four cooker to Pontypool, Newport, Tredegar, Porth, Merthyr Tydfil, in South Wales, and Rhyl, Llandudno, Bangor and Holyhead in North Wales. New features were explained and the appliances were dismantled to show constructional details. Cardiff and Llanelly were also visited. Here Mr. Rolls met home service advisers attending demonstrations given by Miss S. M. Ashworth, of the Research Kitchen of Radiation Ltd. Two further tours by Mr. Rolls are envisaged to cover the middle and west parts of the Wales area.

MONSANTO CHEMICALS, LTD., and THE MIDLAND TAR DISTILLERS, LTD., jointly announce that due to good progress with the building of a tar acids refinery at Four Ashes, near Wolverhampton, the Midland Tar Distillers will take over from Monsanto the selling and sales service of: (a) Ortho-cresol and all grades of cresylic acid as from April 1, 1953; (b) natural phenol on July 1, 1953. It will be recalled that in October, 1951, it was announced by the two companies that the Midland Tar Distillers, Ltd., was building the refinery and would in due course take over from Monsanto the refining of its acids and the selling of the resultant products.

## Electrolux Ltd.

THIS year is the first since the war in which Electrolux refrigerators will be in free supply on the home market. Coincident with this circumstance, the company has introduced certain alterations in policy.

The Model LM.150 is being replaced by the LH.150—a handsome cabinet with a table-top and a drawer for kitchen utensils. This is a completely new innovation in refrigerator design, making the LH.150 a useful cabinet for the small kitchen. Price reductions have been made, and the new prices, with the current rate of purchase tax applied, range from £59 19s. 3d. to £156 7s. 9d.



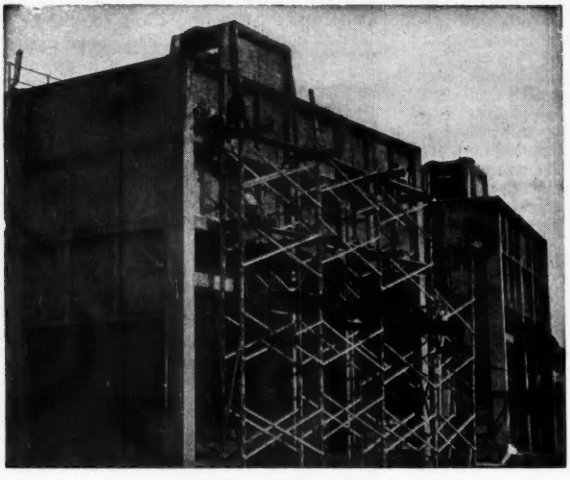
*The new L.H. 150 Electrolux Refrigerator*

It has also been decided to amend the terms of the guarantee. The operation of the cooling unit will be guaranteed for five years; controls, heating equipment, and the cabinet for one year. During these guarantee periods no charge will be made in respect of service due to faulty workmanship or material. This is claimed to be the finest refrigerator guarantee in the country, backed by a nationwide service organisation.

Hire purchase and credit sales facilities are available for all models. Owing to the demands of the export market (which is still of paramount importance), many people in this country in post-war years have been unable to obtain the larger Electrolux models. The fact that these are now available will be widely appreciated.—*Electrolux, Ltd., 153-155, Regent Street, London, W.1.*

**The Scottish Fuel Efficiency Committee** has turned down a suggestion that the work it is doing should be handed over for continuation on industrial organisational lines through a company to be formed for the purpose. It urges continuity of present policies through the Ministry of Fuel and Power and a levy of 1d. on all tonnage sold, to allow expansion of the work.

# Gunite



*One of the reinforced concrete structures reconditioned with Gunite for the City of Carlisle Gas Undertaking.*

**Gunite**—concrete applied by air pressure—has numerous applications where its great density and extreme adhesion have exceptional value.

**For repairing reinforced concrete** it has particular merit, as, due to the method of application, a uniform density and adherence is obtained whenever Gunite is applied

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*Handbook "GUNITE" sent on request*

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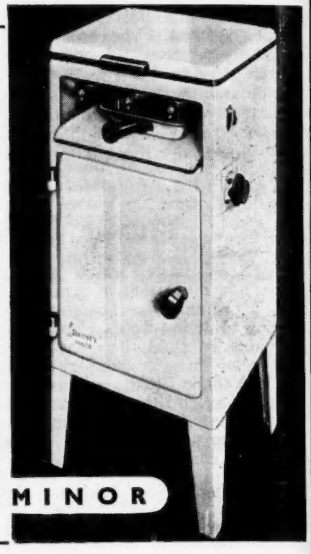
# BIG Capacity for LITTLE Kitchens



Especially suited to the kitchens of flats and small houses, this highly efficient cooker provides utmost cooking capacity in the least possible space. Cast iron construction ensures strength and durability and reduces maintenance costs to a minimum, thus making the Dainty Minor particularly suitable for simple hire or hire purchase.

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